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U. S. DEPARTMENT OF AGRICULTURE,  
OFFICE OF EXPERIMENT STATIONS.

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SOME BOOKS ON AGRICULTURE AND SCIENCES RELATED TO  
AGRICULTURE PUBLISHED 1896-1898.

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## SOME BOOKS ON AGRICULTURE AND SCIENCES RELATED TO AGRICULTURE.

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The accompanying list of books on agriculture and sciences related to agriculture, most of which have been published during the past two years, has been prepared in continuation of the list published in Circular 31 of this Office. The list comprises chiefly books received at the library of this Department, and the bibliographical notices have been prepared in accordance with the form followed by the library. The book notices have been prepared by the editors of the several departments of the Experiment Station Record. While the list is not in any sense complete, it is hoped it may be useful to the officers of our agricultural colleges and experiment stations. Notices of books on subjects relating to chemistry, botany, zoology, and other general sciences have been confined to a few standard works and some others deemed of especial interest to agricultural students. Government reports, experiment station publications, reports of State boards and associations, diaries, calendars, and annuals are not included in this list. The list is classified under general categories corresponding to those in the Experiment Station Record.

### CHEMISTRY.

[The asterisk (\*) indicates that the book is to be found in the library of this Department.]

\* **Adie**, R. H., and **Wood**, T. B. Agricultural chemistry. v. 1, pp. ix+280, figs. 18; v. 2, pp. vii+229. 12°. London, Kegan Paul, Trench, Trübner & Co., 1897.

A text-book dealing with all of the more important substances with which the student of plant and animal life has to become acquainted. The subject is treated "experimentally throughout," and, so far as possible, in nontechnical language. The first volume is devoted to underlying chemical facts and principles; the second deals with the application of these facts and principles in the study of soils, fertilizers, plants, and foods.

\* **Adriance**, John S. Laboratory calculations and specific gravity tables. ed. 3. pp. 144. New York, John Wiley & Sons, 1897.

This is the third edition of a very handy volume for analytical chemists. It contains, among other things, temperature tables for the three thermometric scales; conversion tables for potassium-platinum chlorid, magnesium pyrophosphate, barium sulphate, ammonia, etc.; various conversion factors; tables for converting grams into grains, cubic centimeters into minims, milligrams per liter into grains per United States gallon, etc.; hydrometer and specific gravity tables; saccharometer table; table for dilution of alcohol; weights and measures, and directions for making ordinary laboratory reagents.

Allen, Alfred H. Commercial organic analysis. v. 1, rev. and enl. pp. —. 8°. Philadelphia, Philadelphia Book Co., 1898.

———. Commercial organic analysis. v. 1, rev. and enl. pp.—. 8°. Philadelphia, P. Blakiston's Son & Co., 1898.

The author has been assisted in the revision by Dr. Henry Leffman. He states that this is the only authorized American edition of the work.

Benedikt, Rudolph. Analyse der Fette und Wachsarten (The analysis of fats and waxes). ed. 3, enl. pp. xviii + 659. pl. 1. figs. 48. 8°. Berlin, J. Springer, 1897. The third edition of this text-book, prepared by Ferdinand Ulzer.

———. Chemical analysis of oils, fats, waxes, and of the commercial products derived therefrom. Revised and enlarged by J. Lewkowitsch. pp. 683. 8°. London, Macmillan & Co., 1896.

An English edition of the above.

Durand, C. See Müntz, A., p. 6.

\* Fresenius, Carl Reinigius. Manual of quantitative chemical analysis. pp. xvii + 748. New York, John Wiley & Sons, 1897.

This is an authorized translation by Horace L. Wells of the sixteenth German edition of this standard treatise, which is said to be thoroughly revised.

Garnier, Lambling, and Schlagdenhauffen. Encyclopédie chimique (Encyclopedia of chemistry). v. 9, pt. 1, pp. 410, ill., 8°; pt. 2, pp. 703 + 1232, 8°. Paris, Dunod & Vicq, 1896 and 1897.

This encyclopedia is edited by Frémy. Volume 9 contains sections on organic chemistry, physiological chemistry, and chemistry of the fluids and tissues of the body.

Gautier, A. Die Chemie der lebenden Zelle (The chemistry of the living cell). Authorized translation. pp. iv + 130. figs. 11. Vienna, A. Hartleben, 1896.

———. Cours de chimie minérale, organique et biologique (Mineral, organic, and biological chemistry). v. 1, pp. 622, figs. 244; v. 2, pp. 715, figs. 72; v. 3, pp. 827, figs. 122. Paris, G. Masson, 1895.

This is the second edition of volumes 1 and 2, which are revised and enlarged.

\* Grandeau, Louis. Traité d'analyse des matières agricoles (Treatise on the analysis of agricultural substances). ed. 3, rev. and enl. v. 1, pp. 560, figs. 54; v. 2, pp. 614, figs. 117. Paris, Berger-Levrault & Cie., 1897.

The first volume deals with methods of analysis in general, analysis of soils and fertilizers, and fertilizer legislation; the second, with air, water, analysis of plants, fodders, animal products, manure, wool, milk, fats, and fermented liquors.

\* Griessmayer, Victor. Die Proteide der Getreidearten, Hülsenfrüchte und Oel-samen sowie einiger Steinfrüchte (The proteids of cereals, leguminous seeds, and oil-bearing seeds, as well as of some stone fruits). pp. 301. 8°. Heidelberg, Carl Winter's Universitätsbuchhandlung, 1897.

This appears to be a full translation into German of the work of T. B. Osborne, in collaboration with R. H. Chittenden, Clark Voorhees, and George Campbell, as published in the Annual Reports of the Connecticut State Experiment Station and elsewhere.

\* Guareschi, Icilio. Einführung in das Studium der Alkaloide, mit besonderer Berücksichtigung der vegetabilischen Alkaloide und der Ptomaine (Introduction to the study of the alkaloids, with special reference to the vegetable alkaloids and ptomaines). German edition by H. Kunz-Krause. pp. 657. Berlin, R. Gaertner's Verlagsbuchhandlung, 1896-97.

This is an extensive work on the chemistry of these bodies, methods of investigating, identifying, and determining them, etc. A very large number of references to the literature are given in footnotes.



\* **Herzog, Alois.** Die Flachsfaser in mikroskopischer und chemischer Beziehung (The flax fiber in its microscopical and chemical relations). pp. 26. figs. 3. 8°. Trauteman, 1896.

Treats briefly of the microscopy of the stem and fiber; describes various microchemical reactions, with means of detecting the fiber in cloth and paper, and discusses the chemical constituents of the plant—water, fat, protein, fiber, ash, and nitrogen-free extract.

**Kamensky, George.** See **Mendeléeff, Dmitri**, p. 6.

**Kenwood, Henry R.** Public health and laboratory work. pp. 17 + 491. figs. 116. Philadelphia, P. Blakiston, Son & Co., 1893.

An effort has been made to convey to the reader in a concise and practical form the knowledge necessary to enable him to make those analyses which may be fairly considered to be included within the domain of practical hygiene. The volume is divided into six parts—hygienic analysis of water, soil examination, air analysis, coal-gas analysis, food examination, and methods of bacteriological work, with special reference to the examination of air, water, and food, the last part being by Robert Boyce.

\* **König, J.** Die Untersuchung landwirtschaftlich und gewerblich wichtiger Stoffe (The examination of agricultural and commercial products). ed. 2. pp. 824. col. pl. 1. figs. 248. Berlin, Paul Parey, 1898.

A revised edition of this practical laboratory manual. It contains chapters on the analysis of soils (including stone, lime, and cement); fertilizers; feeding stuffs; milk and dairy products; fats and oils; raw materials used in the manufacture of sugars, spirits, and vinegar; beer and brewing materials; wine; water; and wool. Chapters are also included on the testing of seeds, the preparation of laboratory reagents, and the injuries to vegetation due to the smoke, vapors, and dust from manufactories. Numerous tables are included.

**Kunz-Krause, Hermann.** See **Guareschi, Icilio**, p. 4.

**Lambling.** See **Garnier**, p. 4.

\* **Landolt, Hans.** Das optische Drehungsvermögen organischer Substanzen und dessen praktische Anwendung (The optical rotatory power of organic substances and its practical application). ed. 2. pp. xxiv + 655. ill. 8°. Braunschweig, F. Vieweg, 1898.

This is a revised edition, entirely rewritten with the assistance of P. Lindtner, F. Schütt, L. Berndt, and T. Posner.

**Lassar-Cohn.** A laboratory manual of organic chemistry. Translated by A. Smith. pp. 403. London and New York, Macmillan & Co., 1895.

\* **Louguine, Wladimir Fedorowitsch.** Beschreibung der Hauptmethoden, welche bei der Bestimmung der Verbrennungswärme üblich sind (Description of the principal methods which are used in the determination of heats of combustion). ed. 1. pp. 113. pls. 4. figs. 24. 4°. Berlin, R. Friedlander & Sohn, 1897.

The author describes in detail the instruments and methods used in determining heats of combustion. The chapter on ice calorimeters is especially interesting, since this information has not been previously compiled.

\* **Maiden, Joseph Henry.** Chemistry of the Australian indigenous vegetation. pp. 33. 8°. n. p., n. d.

\* **Mandel, John A.** Handbook for the biochemical laboratory, including methods of preparation and numerous tests arranged alphabetically. pp. 101. 12°. New York, John Wiley & Sons; London, Chapman & Hall, Ltd., 1896.

In this book an attempt has been made to give concise directions for preparing the most important substances that enter into the composition of the fluids and tissues of the animal body. The preparation of over 60 substances is described, and the properties of the substances given. In addition, about 200 tests are given, arranged alphabetically under the name of the author or the more common name.

**Mendeléeff, Dmitri.** The principles of chemistry. Translated from the Russian (ed. 6) by George Kamensky and edited by T. A. Lawson. ed. 2. v. 1, pp. xviii + 621; v. 2, pp. 1 + 518, figs. and dgms. 96. 8°. London, New York, and Bombay, Longmans, Green & Co., 1897.

**Milliau, E.** See **Müntz, A.** (below).

**Moor, C. G.** See **Pearmain, T. H.** (below).

**Müntz, A., Durand, C., and Milliau, E.** Rapport sur les procédés à employer pour reconnaître les falsifications des graisses comestibles et industrielles (Report on the methods of determining adulterations in edible and commercial fats). pp. 56. 8°. Paris, 1897.

**Pearmain, T. H., and Moor, C. G.** Aids to the analysis of food and drugs. pp. 160. 12°. Paris, J. B. Baillière et fils, 1896.

\* **Peffer, Elwood S.** Beet sugar analysis. pp. 224. dgms. 49. 12°. Chino, Cal., E. C. Hamilton, 1897.

This volume, which is designed for a manual for beet-sugar chemists, describes the apparatus used and gives general analytical methods as well as methods of analysis of sugars and sugar products and supplies.

\* **Pictet, Amé.** La constitution chimique des alcaloïdes végétaux (The chemical constitution of vegetable alkaloids). ed. 2. pp. 421. Paris, G. Masson & Cie.; Geneva, Georg & Co., 1897.

The second edition has been thoroughly revised and rewritten.

**Schlagdenhauffen.** See **Garnier, p. 4.**

**Schloesing, Th.** Principes de chimie agricole (Principles of agricultural chemistry). ed. 2. pp. 200. 16°. Paris, Masson & Cie., 1897.

**Sestini, Fansto.** Chimica agraria: nutrizione delle piante (Agricultural chemistry: nutrition of the plant). pp. 240. 8°. Pisa, Spoerri, 1897.

\* **Sibson, Alfred and A. E.** Agricultural chemistry: A familiar explanation of the chemical principles involved in the operations of the farm. rev. ed. pp. 348. figs. 3. 8°. London, Routledge, 1892.

**Sidersky, D.** Polarisation et saccharimétrie (Polarization and saccharimetry). pp. 152. ill. 16°. Paris, G. Masson, 1896.

**Smith, A.** See **Lassar-Cohn, p. 5.**

\* **Tollens, Bernhard.** Kurzes Handbuch der Kohlenhydrate (A short handbook of the carbohydrates). pp. 370. figs. 24. 12°. Breslau, Eduard Trewendt, 1888.

A very comprehensive handbook of the knowledge of the carbohydrates up to the time of its publication.

\* ———. Kurzes Handbuch der Kohlenhydrate (A brief handbook of the carbohydrates). v. 2. pp. 407. 12°. Breslau, Eduard Trewendt, 1895.

This is supplementary to volume 1 and is devoted to the progress of the knowledge of the carbohydrates since 1888.

**Vivier, A.** Analyse et essais des matières agricoles (Analysis and tests of agricultural materials). pp. 470. figs. 88. 16°. Paris, J. B. Baillière et fils, 1897.

Includes chapter on general methods of analysis and their application, and on special methods for fertilizers and amendments, soils and rocks, waters, and vegetable and animal substances.

**Wells, Horace L.** See **Fresenius, Carl Remigius, p. 4.**

**Wender, N.** Landwirtschaftliche Chemie (Agricultural chemistry). pp. viii + 259. pls. 3. figs. 33. 8°. Berlin, Paul Parey, 1898.

\* **Went, F. A. F. C.** Onderzoekingen omtrent chemische physiologie van het suikerriet (Investigations concerning the chemical physiology of sugar cane). pp. 87. pls. 8. Soerabaia, H. Van Ingen, 1896.

Reprinted from *Arch. Java Suikerind.*, 1896, No. 11.



\* **Wiley, Harvey Washington.** Principles and practice of agricultural analysis. A manual for the examination of soils, fertilizers, and agricultural products; for the use of analysts, teachers, and students of agricultural chemistry. v. 3. Agricultural products. pp. xii+665. pls. 3. figs. 111. 8°. Easton, Pa., Chemical Publishing Co., 1897.

The third volume of this comprehensive work treats of sugar and starches; the determination of carbohydrates, fats, and oils; separation and estimation of bodies containing nitrogen; dairy products, and miscellaneous agricultural products—cereals and cereal foods, grasses and fodders, meats, fruits and vegetables, tea and coffee, tannins and allied bodies, tobacco, and fermented beverages.

**Wood, T. B.** See **Adie, R. H.**, p. 3.

## BOTANY.

\* **Arthur, Joseph Charles, and MacDougal, D. T.** Living plants and their properties. pp. 242. pls. 30. 8°. New York, Baker & Taylor, 1898.

The following subjects are treated: The special senses of plants; development of irritability; wild lettuce as weed and compass plant; mimosa—a typical sensitive plant; universality of consciousness and pain; how cold affects plants; two opposing factors of increase; chlorophyll and growth; leaves in spring, summer, and autumn; the significance of color; the right to live; and distinction between plants and animals. An index to plant names is included.

\* **Bailey, Liberty Hyde.** Lessons with plants; suggestions for seeing and interpreting some of the common forms of vegetation. pp. 491. figs. 446. 12°. New York, The Macmillan Co., 1898.

This is a series of nature studies with plants arranged for elementary and secondary schools. It is so designed as to serve as a guide for the teacher and pupil alike, and is undoubtedly one of the most valuable of the recent contributions to nature studies.

\* ———. The survival of the unlike. pp. 515. figs. 21. 12°. New York, The Macmillan Co., 1896.

A collection of essays on evolution suggested by the study of domesticated plants. The author thinks heredity is an acquired force and that normally unlike produces unlike. The essays are grouped under three heads: (1) Those touching the general facts and philosophy of evolution; (2) those expounding the fact and causes of variation; and (3) those tracing the evolution of particular types of plants.

\* **Bergen, Joseph Y.** Elements of botany. ed. 2. pp. 275+158. ill. 12°. Boston, Ginn & Co., 1897.

This book differs from most treatises on elementary botany in that it introduces a considerable amount of vegetable physiology and anatomy instead of the more usual presentation of the subject. It is intended that the plant should be studied as a factor in the struggle for existence, and the methods of observation and study advocated can not be too highly commended. A brief synoptical key and flora is appended that is designed more as illustrative of the means for identification, this being considered subordinate to the main work, than for extended use; the more complete manuals are to be preferred for this purpose.

This is a Pacific coast edition in which a flora of the Pacific coast by **Alice Eastwood** has been substituted for the local flora of the original edition.

\* **Britton, Nathaniel Lord, and Brown, Addison.** Illustrated flora of the North-eastern United States and Canada. v. 2. pp. 643. figs. 1467. v. 3. pp. xiv+588. figs. 1272. New York, Chas. Scribner's Sons, 1897-1898.

The region covered by these volumes extends from Newfoundland to the parallel of southern Virginia and from the Atlantic Ocean to the 102d meridian. The orders treated are Portulacaceæ—Menyanthaceæ in vol. 2 and Apocynaceæ—Compositæ in vol. 3.

**Brown, Addison.** See **Britton, Nathaniel Lord**, p. 7.

\* **Chapman, Alvan Wentworth.** *Flora of the Southern United States.* ed. 3, rev. pp. 655. Cambridge, Mass., The Cambridge Botanical Supply Co., 1897.

A manual for the region south of Virginia and Kentucky and east of longitude 97° west.

**Costantin, Julien.** *Les végétaux et les milieux cosmiques (Plants and their environments).* pp. 296. figs. 171. 8°. Paris, F. Alcan, 1898.

**Courchet, Lucien.** *Traité de botanique, comprenant l'anatomie et la physiologie végétales (Anatomy and physiology of plants).* 2 v. pp. 1600. figs. 800. 8°. Paris, J. B. Baillière et fils, 1898.

This is a treatise on vegetable anatomy and physiology, together with descriptions of the natural families of plants. Each organ of the plant is studied independently from a morphological, a structural, and a functional standpoint, and its various modifications noted.

\* **Detmer, Wilhelm.** *Das Pflanzenphysiologie Praktikum; Anleitung zu pflanzen-physiologischen Untersuchungen für Studierende und Lehrer der Naturwissenschaften sowie der Medicin, Land- und Forstwirtschaft (Vegetable physiology. An introduction to the study of plant physiology for students and teachers, etc.).* ed. 2, rev. 8°. pp. 456. Jena, 1895.

**Frank, Albert Bernhard.** *Lehrbuch der Pflanzenphysiologie mit besonderer Berücksichtigung der landwirthschaftlichen Culturpflanzen (Vegetable physiology with special reference to agricultural plants).* ed. 2. pp. vii+205. figs. 57. Berlin, Paul Parey, 1896.

**Friedrich, Josef.** *Ueber den Einfluss der Witterung auf den Baumzwnachs (Influence of weather on tree growth).* pp. v+160. figs. 40. 4°. Vienna, Wilhelm Frick, 1897.

\* **Hellriegel, Friedrich Hermann, Wilfarth, H., et al.** *Beiträge zur Stickstofffrage; Vegetationsversuche über den Stickstoffbedarf der Gerste. (A contribution to the nitrogen question; Vegetation experiments on the nitrogen requirements of barley).* pp. 77. pl. 1. 8°. Berlin, Paul Parey, 1897.

An account of experiments carried out under the direction of Hellriegel at the Bernberg Agricultural Experiment Station and first reported in *Ztschr. Fer. Rübenz.-Ind.*

\* **Husnot, Tranquille.** *Graminées; descriptions, figures et usages des graminées spontanées et cultivées de France, Belgique, Îles Britanniques, Suisse (Descriptions, figures, and uses of the indigenous and cultivated grasses of France, Belgium, Great Britain, and Switzerland).* v. 1-2. ill. f°. Cahan, The author, 1896-97.

\* **Leger, M.** *Recherches sur la structure des mucorinées (Investigations on the structure of the molds).* pp. 157. ill. 8°. Poitiers, Druinand, 1896.

\* **Lochman, Charles L.** *Photographs of medicinal and economic plants from natural living specimens.* pls. 234. f°. Bethlehem, Pa., The author, 1898.

**Loew, Oscar.** *The energy of living protoplasm.* pp. 120. London, Kegan Paul, Trench, Trübner & Co., 1896.

**Lubbock, Sir John.** *A contribution to our knowledge of seedlings.* pop. ed. pp. 294. figs. 282. 8°. London, Kegan Paul, Trübner, Trench & Co., 1896.

**MacDougal, D. T.** See **Arthur, Joseph Charles**, p. 7.

\* **Molisch, Hans.** *Untersuchungen über das Erfrieren der Pflanzen (Investigations on the effect of cold on plants).* pp. 73. ill. 8°. Jena, Gustav Fischer, 1897.

\* **Pfeiffer, Wilhelm.** *Pflanzenphysiologie; ein Handbuch der Lehre vom Stoffwechsel und Kraftwechsel in der Pflanze (Vegetable physiology; a treatise on the metabolism of matter and energy in plants).* ed. 2. v. 1. pp. 606. figs. 70. 8°. Leipzig, Wilhelm Engelmann, 1897.

Volume 1 treats of the metabolism of matter. The first edition appeared in 1880.

**Plüss, B.** Unsere Getreidearten und Feldblumen. Bestimmung und Beschreibung unserer Getreidepflanzen auch der wichtigeren Futtergewächse Feld- und Wiesenblumen (Cereals and field flowers. Descriptions of the species of cereals and the more important forage, field, and meadow plants). pp. vii+204. figs. 200. Freiburg, Herders Verlagshandl, 1897.

\* **Robinson, Benjamin Lincoln.** Synoptical flora of North America. v. 1, pt. 1, no. 2. Cambridge, Mass., 1897.

This is in continuation of the work begun by Dr. Asa Gray and contains some of his preliminary studies on a number of the families. This number embraces the families from Caryophyllaceæ to Polygalaceæ. Professors Trelease, Bailey, and Coulter elaborated several of the groups, the whole being edited by Dr. Robinson.

\* **Sappin-Trouffy.** Recherches histologiques sur la famille des Uredinées (Histological studies of the Uredineæ). pp. 190. figs. 69. 8°. Poitiers, Le Botaniste, 1896.

**Schindler, Franz.** Die Lehre vom Pflanzenbau auf physiologischer Grundlage (The physiological basis of plant growth). pp. xvi+372. figs. 15. 8°. Vienna, C. Fromme, 1897.

\* **Waeber, Robert.** Lehrbuch für den Unterricht in der Botanik mit besonderer Berücksichtigung der Kulturpflanzen (Text-book of botany with special reference to cultivated plants). pp. 315. pls. 24. figs. 240. Leipsic, Ferdinand Hirt & Sohn, 1896.

A systematic botany of cultivated plants. The elements of descriptive botany and plant physiology are given and the relation of plants to man, their geological significance, and geographical distribution are noted.

**Wilfarth, H.** See **Hellriegel, Friedrich Hermann**, p. 8.

## BACTERIOLOGY AND FERMENTATION.

(See also **Veterinary Science**.)

**Besson, Albert.** Technique microbiologique et sérothérapique (Technique of bacteriology and serum therapeutics). pp. xi+581. figs. 223. 8°. Paris, J. B. Bailière et fils, 1898.

A laboratory guide.

\* **Crookshank, Edgar March.** Text-book of bacteriology, including the etiology and prevention of infective diseases, and a short account of yeasts and moulds, hæmatozoa, and psorosperms. ed. 4, enl. pp. 715. pls. 22. figs. 273. 8°. London, H. K. Lewis, 1896.

Deals with theoretical and technical bacteriology, the etiology and prevention of infectious diseases, systematic and descriptive bacteriology. Yeasts and molds, hæmatozoa, coccidia, or psorosperms, *Amoeba coli*, bacteriological apparatus and reagents are treated in appendixes. A bibliography is given. The report of the Royal Vaccination Commission is given in a supplementary appendix.

\* **Duclaux, Pierre Emile.** Traité de microbiologie (Treatise on microbiology). pp. 632. figs. 6. 8°. Paris, Masson & Cie., 1898.

This work discusses the theories of fermentation, etc., the morphology and structure of microbes, spontaneous generation, cultural methods, staining methods, composition of bacteria, mineral nutrition of microbes, aerobic and anaerobic life, food of microbes, physiological variations, morphological changes under the influence of medium and other physical agents, vitality of microbes, a study of soil organisms and their distribution, microbes of the air and water and their distribution, purification of sewage and of potable waters, the filtration of rain water, spontaneous purification of running water, and the solar purification of river waters.



\* **Fischer, Alfred.** Vorlesungen über Bakterien (Lectures in bacteriology). pp. 186. figs. 29. 8°. Jena, Gustav Fischer, 1897.

The author discusses the morphology, variability, conception of species, and systematic arrangement of bacteria. Their position and distribution in nature are discussed and general directions given for their cultivation and study. Chapters are devoted to respiration, action of physical and chemical agents on bacteria, the assimilation of nitrogen, denitrification, fermentation, and on bacteria as the cause of disease. The author does not accept the bacterial origin of certain plant diseases, but maintains that bacteria can not primarily induce disease in plants. They must gain entrance through wounds. A bibliography of nearly 200 titles is also given.

**Kayser, E.** Les levures: Characters, morphologiques et physiologiques; applications des levures selectionnées (Morphology and physiology of yeasts and their uses). pp. 195. figs. 19. Paris, Masson & Cie.

\* **Lafar, Franz.** Technische Mykologie (Technical mycology). pp. iv+362. pl. 1. figs. 90. Jena, G. Fischer, 1897.

A handbook of the physiology of fermentation for chemists, pharmacists, and agriculturists.

\* **Macé, E.** Traité pratique de bactériologie (A guide to bacteriology). ed. 3. pp. 1144. figs. 240. 8°. Paris, J. B. Baillière et fils, 1897.

This edition is greatly extended from the former, bringing the subject up to date. Bacteriological methods are fully described and the subject of the products of bacteria discussed.

\* **Migula, Walther.** System der Bakterien; Handbuch der Morphologie, Entwicklungsgeschichte und Systematik der Bakterien (Handbook of the morphology, development, and toxonomy of bacteria). 1 v. pp. viii+368. pls. 6. 8°. Jena, Gustav Fischer, 1897.

**Müller, N. J. Carl.** Neue Methoden der Bakterienforschung (New methods of bacterial study). pt. 1. pp. iv+96. col. pls. 20. 8°. Stuttgart, E. Nägele.

**Rodet, A.** La variabilité des microbes (The variability of microbes). pp. 216. 8°. Paris, J. B. Baillière et fils, 1896.

On the morphological variations in colonies and the microorganisms themselves, their chemical and pathological functions, etc.

**Wurtz, Robert Théodore.** Technique bactériologique (Bacteriological technique). ed. 2. pp. 544. figs. 57. sm. 8°. Paris, Masson & Cie., 1898.

This is a revised edition which gives a résumé of the principal methods employed in isolating and cultivating micro-organisms. The methods for the separation of the substances secreted by the micro-organisms are also given. The information which is given in this book is claimed to be new.

\* **Sternberg, George Miller.** A text-book of bacteriology. ed. 2, rev. and enl. pp. ix+693. pls. 9. figs. 200. New York, William Wood & Co., 1896.

The work aims to be at once a manual and text-book of bacteriology. Many of the plates and figures are colored. This is one of the best résumés of the knowledge of bacteriology.

## ZOOLOGY.

\* **Bronn, Heinrich Georg, editor.** Klassen und Ordnungen des Thierreichs (Classes and orders of the animal kingdom). v. 6. ill. 8°. Leipsic and Heidelberg, C. F. Winter, 1895.

An encyclopedic work on the animal kingdom, appearing in parts, and treating of the various groups systematically, morphologically, and bibliographically, etc. Volume 6 treats of mammals.

\* **Chapman, Frank Michler.** Bird life, a guide to the study of our common birds. pp. 269. pls. 75. figs. 25. 8°. New York, D. Appleton & Co., 1897.

The book is addressed to those who desire a general knowledge of bird life and some acquaintance with common American birds. The bird, its place in nature and relation to man; the factors of evolution; colors of birds; migration of birds; voice of birds; nesting; and the means of identifying birds are discussed, and a field key to the land birds given. The full-page illustrations are colored and are by Ernest Seton Thompson.

\* **Coues, Elliott.** Citizen-bird. pp. 430. ill. 12°. New York, The Macmillan Co., 1897.

A popular work in narrative form, bringing out the habits, etc., of our common birds. A brief synoptical description follows each chapter.

\* **Delage, Yves, and Hérouard, Edgard.** Traité de zoologie concrete. Tome I, La cellule et les protozoaires; Tome V, Les vermiéens (Treatise on concrete zoology. Vol. 1, The cell and the protozoa; vol. 5, The worms). v. 1, pp. 584, figs. 870, 8°; v. 5, pp. 372, pls. 46, figs. 518, 8°. Paris, Schleicher frères, 1897.

This is a series of 11 volumes giving a summary of the knowledge of the animal kingdom. Volume 1 discusses the cell and its functions, its structure, chemical composition, physiology, etc. The protozoa are described according to class, order, family, genus, and species. Volume 5 gives a systematic and morphological description of the classes Gephyriae, Bryozoa, Axobrachia, Trochelmia, Kinorhynchia, Chaetognathia, and Brachiopodia, illustrating them with diagrammatic figures of morphological types. The latter part of the volume deals with general questions relating to the group.

\* **Eckstein, Karl.** Forstliche Zoologie (Forest zoology). pp. 664. figs. 666. Berlin, Paul Parey, 1897.

A work of especial value for the figures. The author has endeavored to cover the whole range of zoology, devoting 130 pages to a systematic treatment of mammals, 66 to birds, 36 to fishes, and 216 to insects. For the more common birds little space is allowed, some being mentioned only by name.

\* **Elliot, Daniel Giraud.** Gallinaceous game birds of North America. pp. 220. pls. 46. 8°. New York, Francis P. Harper, 1897.

The birds are described, their geographical range given, and their habits discussed.

\* **Gibson, William Hamilton.** Sharp eyes; a rambler's calendar of fifty-two weeks among insects, birds, and flowers. pp. 322. 8°. New York, Harper Bros., 1896.

**Haswell, W. H.** See **Parker, T. J.**, p. 12.

**Heider, Karl.** See **Korschelt, Eugen** (below).

**Hérouard, Edgard.** See **Delage, Yves** (above).

\* **Ingersoll, Ernest.** Wild neighbors; outdoor studies in the United States. pp. 301. ill. 12°. New York, The Macmillan Co., 1897.

**Keller, C.** Forstzoologischer Excursionsführer (Forest-zoological guide book). pp. 277. figs. 78. sm. 8°. Leipzig and Vienna, Carl Fromme, 1897.

A guide for the beginner in the study of forest zoology. The treatment is from the standpoint of leaf, bark, and wood injuries. Injuries in mountains are specially considered, and also such as are caused by mammals. In an appendix the injuries are classified according to the species of tree affected.

\* **Korschelt, Eugen, and Heider, Karl.** Text-book of the embryology of the invertebrates. Trans. from the German by Edward L. Mark and W. McM. Woodworth. pt. 1. Porifera, Cnidaria, Ctenophora, Vermes, Enterozoen, Echinodermata. pp. 484. figs. 225. 8°. London, Swan, Sonnenschein & Co.; New York, The Macmillan Co., 1895.

A text-book for the advanced student. Copious bibliographies are given, as in the German edition. Some new matter has been added both by the original authors and by the translators, but it is always inclosed in brackets.

\* **Lacroix-Danliard**. La plume des oiseaux; histoire naturelle et industrie (The feathers of birds; natural history and industry). pp. 368. 12°. Paris, J. B. Bailière et fils, 1891.

This deals with the various birds noted especially for their plumage and found in various parts of the world, with especial reference to the uses made of their plumes. The subjects of distribution and domestication are discussed to some extent.

\* **La Fontaine**, Alphonse de. Trente années d'observations sur les migrations des oiseaux de la faune Luxembourgeoise, années 1863 à 1894 (Thirty years' observations on the migrations of the birds of the Luxembourg fauna, 1863 to 1894). pp. 238. pl. 1. 8°. Luxembourg, Bück, 1897. (Luxembourg, Institut grand-ducal de publications, v. 25.)

The author's observations are given in detail and the subject of bird migration and its causes, etc., discussed in a general manner.

\* **Larbalétrier**, Albert. Les animaux utiles et nuisibles à l'horticulture (insectes exceptés) (Animals useful and injurious to horticulture—insects excepted). pp. 153. figs. 29. 12°. Paris, Octave Doin, 1897. (Bibliothèque d'horticulture et de jardinage.)

This describes the mammals, birds, batrachia, reptiles, crustacea, myriapods, worms, and mollusks whose existence is either a benefit or an injury to horticulture. Characters, habits, ravages, means of destruction and protection against them are brought out.

\* **Lydekker**, Richard, *editor*. Royal natural history. 6 v. pp. 2496. pls. 72. figs. 1600. 4°. London and New York, Frederick Warne & Co., 1893-96.

Vol. I. Mammals. Vol. II. Mammals. Vol. III. Mammals and birds. Vol. IV. Birds. Vol. V. Reptiles, fishes, etc. Vol. VI. Invertebrates.

A comprehensive popular work on zoology, finely illustrated.

\* ———. Geographical history of mammalia. pp. 400. 8°. Cambridge [England] University Press, 1896.

A work on geographical distribution, excellent for its comprehensiveness, taking as it does paleontology into account. In the introductory chapter such general questions as the influence of temperature, humidity, the relation of groups to distribution, barriers, the influence of man, etc., are discussed.

\* **Parker**, T. J., and **Haswell**, W. H. A text-book of zoology. v. 2. pp. 1400. figs. 1173. London, Macmillan & Co., 1897.

**Perrier**, Edmond. Traité de zoologie. Fasc. 3. Arthropodes (Treatise on zoology. Pt. 3, Arthropods). pp. 488. figs. 277. 8°. Paris, G. Masson, 1893.

This deals with the morphology and taxonomy of the Arthropods, going into family and to some extent into generic details.

\* **Railliet**, A. Traité de zoologie médicale et agricole (Treatise on medical and agricultural zoology). ed. 2. pp. 1303. figs. 892. 8°. Paris, Asselin & Houzeau, 1895.

This is a thorough treatise on the subject. In the first part general questions are discussed. For example, inorganic and organic bodies; vegetables and animals; organization and development of animals, cells, and tissues; multiplication of plastides; association and differentiation of plastides; division of physiological labor; differentiation, reduction, co-relation, and comparison of organs, etc.; relation of the animal organism to its environment; its relation to the inorganic world, with organisms, etc.; adaptation, variability, etc.; relation of animals to man; noxious and useful animals; taxonomy; value of taxonomic groups, including an historical review; the chief groups of zoological systems; species; zoological nomenclature, and the division of the animal kingdom into branches, etc.

In the second or special part these groups are individually considered, beginning with the protozoa. Life histories are given so far as known. Distribution is noted, and in the case of the worms many species are tersely described. Two sizes of type are used, the more important matter appearing in long primer and the less important in brevier.



\* **Régnier**, Raymond. Les oiseaux utiles à l'agriculture (The birds useful to agriculture). pp. 69. 8°. Aix, H. Ely, 1893.

A popular work, containing brief descriptions of 37 birds and their habits.

\* **Reynolds**, Charles B. The game laws in brief. Laws of the United States and Canada relating to game and fish seasons, for the guidance of sportsmen and anglers. pp. 114. 12°. New York, Forest and Stream Publishing Co., 1897.

\* **Ridgway**, Robert. Manual of North American birds. ed. 2. pp. 653. pls. 124. 8°. Philadelphia, J. B. Lippincott Co., 1896.

This is an elaborate key to the birds of North America. The plates illustrate the taxonomic features of the birds described.

\* **Sharpe**, Richard Bowdler. Catalogue of the Limicolæ in the collection of the British Museum. pp. 794. pls. 7. figs. 17. 8°. London, British Museum, 1896.

This forms volume 24 of this great catalogue, and agrees in form, etc., with the volumes that have already appeared.

**Shufeldt**, Robert Wilson. Chapters on the natural history of the United States. pp. 472. figs. 130. 8°. New York, Studer Bros., 1897.

This volume, issued under the auspices of the Natural History Association of America, treats in a popular manner of the various common mammals, birds, fishes, reptiles, and insects of the United States. The illustrations are nearly all half-tone reproductions of photographs apparently especially prepared for this work.

\* **Trouessart**, Edouard Louis. Les oiseaux utiles (Useful birds). col. pls. 44. 4°. Paris, J. B. Baillière et fils, 1891.

\* ———. Catalogus mammalium tam viventium quam fossilium (Catalogue of living and extinct mammals). Part 1, pp. 218. Primates, Prosimiæ, Chiroptera, Insectivora. Part 2, pp. 219-452. Carnivora, Pinuipedia, Rodentia I. Part 3, pp. 453-664. Rodentia II, Myomorpha, Hystricomorpha, and Lagomorpha. Part 4, pp. 665-998. Tillodontia and Ungulata. new (first complete) ed. 8°. Berlin, R. Friedlander & Sohn, 1897.

## PHYSIOLOGY.

**Blauberg**, Magnus. Experimentelle und kritische Studien über Säuglingsfäces bei natürlicher und künstlicher Ernährung (Experimental and critical studies on the composition of the feces of infants fed mother's milk and artificially nourished). pp. v+120. 8°. Berlin, A. Hirschwald, 1897.

The author gives especial attention to the mineral constituent of feces and to analytical methods.

**Bödtker**, E. Beitrag zur Kenntniss des Eiweissabbaues im menschlichen Organismus (Contribution to the study of the formation of protein in the human organism). Bergen, J. Grieg, 1896.

An extended study of the nitrogen in the urine of children and adults in health and disease.

\* **Chauveau**, A. La vie et l'énergie chez l'animal (Life and muscular energy in animals). pp. 104. 8°. Paris, Asselin & Houzeau, 1894.

This is regarded by the author as an introductory treatise. It deals with the source of energy in the animal body and with muscular and physiological work.

\* **Chittenden**, Russell H. On digestive proteolysis. pp. 137. 8°. New Haven, 1895.

Reprint of the Cartwright lectures for 1894, delivered before the Alumni Association of the College of Physicians and Surgeons of New York.

\* **Elfstrand**, M. Ueber giftige Erweise welche Blutkörperchen verkleben (Toxalbumoses which coagulate blood). pp. 192. 8°. Upsala, Almqvist & Wiksells Boktryckeriaktiebolag, 1897.

This is an extended study of the toxalbumoses in croton seed. The author gives a brief account of previous investigations on croton seed, its poisonous properties, and also on abrin and ricin.

**Ermenger, E. van.** Contribution à l'étude des intoxications alimentaires (Contribution to the study of poisoning from foods). pp. 269. pls. 3. 8°. Gand, H. Engelke, 1897.

An exhaustive study of the recorded cases of poisoning from eating meat.

\* **Foster, Michael.** A text-book of physiology. pt. 2. ed. 6. pp. xxiv + 632. figs. 35. London and New York, Macmillan & Co., 1895.

The authorized edition, revised by the author. This volume treats of the tissues, of chemical action, and their mechanism, and of nutrition.

**Gamegee, Arthur.** Die physiologische Chemie der Verdauung mit Einschluss der pathologischen Chemie (The chemistry of digestion, physiological and pathological). pp. xvii + 524. pls. 2. figs. 25. 8°. Vienna and Leipsic, F. Deuticke, 1897.

A revised translation from the English by Leon Asher.

\* **Griffiths, A. B.** Respiratory proteids: Researches in biological chemistry. pp. 156. cr. 8°. London, Reeve, 1897.

**Hanausek, T. F.** Lehrbuch der Somatologie und Hygiene für Lehrer- und Lehrerinnen-Bildungsanstalten (Text-book of somatology and hygiene for use in training schools for teachers). ed. 2. pp. vi + 158. pls. 7. figs. 104. 8°. Vienna, Prague, and Leipsic, F. Tempsky, 1897.

Contains chapters on somatology, general hygiene, and school hygiene. The most important foods and food stuffs are treated of.

**Loewy, A.** Untersuchungen über die Respiration und Circulation bei Aenderung des Druckes und des Sauerstoffgehaltes der Luft (Investigations on respiration and circulation under varying atmospheric pressure and oxygen content of the air). pp. 155. Berlin, A. Hirschwald, 1895.

**Marcet, W.** The respiration of man; A contribution to its history. pp. 120. ill. 8°. London, Churchill, 1897.

This volume includes the Croonian lectures delivered before the Royal College of Physicians in 1895, and supplementary considerations of the methods of inquiry and analytical results.

**Marey, E. J.** La machine animale (The animal as a machine). ed. 5. pp. —. figs. 117. 8°. Paris, F. Alcan, 1896.

\* **Mosso, Angelo.** Fisiologia dell 'uomo sulle Alpi; studi fatti sul monte Rosa (The influence of the Alps on the physiological condition of man; studies made on Monte Rosa). pp. 374. ill. 8°. Milan, Treves, 1897.

The effect of high altitudes on man is discussed from a physiological standpoint.

\* **Pavy, F. W.** The physiology of carbohydrates. pp. xvi + 141. London, J. & A. Churchill, 1895.

A reply to Paton's criticism of the author's earlier work.

## METEOROLOGY.

\* **Archibald, Douglas.** The story of the atmosphere. pp. 194. figs. 43. 12°. New York, D. Appleton & Co., 1897.

One of the Library of Useful Stories issued by these publishers. This is "a series of little books dealing with various branches of useful knowledge and treating each subject in clear, concise language, as free as possible from technical words and phrases, by writers of authority." The main features of the conditions which prevail in the atmosphere are treated. The subject of weather and the description of instruments are omitted, and climate is only briefly touched upon. A chapter is devoted to the subject of flight.

**Chambers, G. F.** The story of the weather simply told for general readers. pp. 232. 18°. (1897.)

One of the Library of Useful Stories.

**Dumas, Léon.** Physique météorologique. Théories nouvelles déduites de l'observation directe; applications intéressant l'hygiène et l'agriculture (Meteorological

physics. New theories deduced from direct observations. Applications of interest in hygiene and agriculture). pp. 219. ill. 8°. Huy, 1896.

\* **Hann, Julius.** *Handbuch der Klimatologie* (Handbook of climatology). ed. 2, enl. v. 1, pp. xii + 404, figs. 13; v. 2, pp. viii + 384, figs. 5; v. 3, pp. viii + 576, figs. 4. 8°. Stuttgart, J. Engelhorn, 1897.

**Hoffmann, E.** *Traité populaire sur l'air atmosphérique* (A popular treatise on atmospheric air). pp. 144. 18°. Paris, 1896 (?).

**Marcuse, Adolf.** *Die atmosphärische Luft* (The atmosphere). pp. 77. 8°. Berlin, R. Friedländer & Son, 1896.

This is a general treatise on the atmosphere.

**Van Beber, W. J.** *Die Wettervorhersage* (Weather forecasting). ed. 2, rev. and enl. Stuttgart, Ferdinand Enke, 1898.

\* **Waldo, Frank.** *Modern meteorology*. pp. 460. figs. 112. 12°. London, Walter Scott, Ltd. New York, Charles Scribner's Sons, 1893.

This work, which is one of the contemporary Science Series edited by Havelock Ellis, is intended for students of meteorology who have little access to original sources of information. It contains chapters on sources of modern meteorology, apparatus, and methods, thermodynamics of the atmosphere, general motions of the atmosphere, secondary motions of the atmosphere, and applied meteorology.

## SOILS AND WATERS.

**Canevari, A.** *Clima e terreno agrario* (Climate and agricultural soils). pp. 72. 16°. Milan, 1895.

**Chapman, Ernest Theophron.** See **Wanklyn, James Alfred**, p. 16.

**Coreil, Francois.** *L'eau potable* (Potable water). pp. 359. figs. 135. Paris, J. B. Baillière et fils.

\* **Merrill, George Perkins.** *A treatise on rocks, rock-weathering, and soils*. pp. xx + 411. pls. 25. figs. 42. New York, The Macmillan Co.; London, Macmillan & Co. Ltd., 1897.

In the work here presented the writer has endeavored to bring together in systematic form the results of several years' study of the phenomena attendant upon rock degeneration and soil formation. Although beginning with a discussion of rocks and rock-forming minerals, the work must be considered in no sense a petrology as this word is commonly used. What is here given relative to the origin, structure, and composition of rock masses is regarded as an essential introduction to the chapters on rock-weathering.

The book is divided into five parts, as follows: (1) The constituents, physical and chemical properties, and mode of occurrence of rocks; (2) kinds of rocks; (3) the weathering of rocks; (4) transportation and redeposition of rock débris, and (5) the "regolith." The plan of treatment is simple and natural, and leads the reader easily from a consideration of the original rocks through the various stages of their disintegration and decomposition, and the transportation of rock débris to the formation and characteristics of soils.

**Ohlmüller, W.** *Die Untersuchung des Wassers* (Water analysis). ed. 2. pp. xi + 178. pl. 1. figs. 75. 8°. Berlin, J. Springer, 1897.

A laboratory manual.

\* **Risler, Engène.** *Géologie agricole* (Agricultural geology). 3 v. 8°. Paris, Berger-Levrault & Cie., 1884-1895.

The first volume (pp. 390), issued in 1884, contains an introduction to a course of agriculture and treats of the application of geology in the study of arable soils; the formation of soils by the decomposition of primary and volcanic rocks; transition soils; and soils derived from the carboniferous, triassic, and jurassic formations.

The second volume (pp. 424, pls. 11, figs. 10, chart 1), issued in 1889, discusses the suberetaceous soils of the Jura Mountains, the south of France, the north of France,



and of England; the cretaceous soils of the north of France, the south of France, England, Belgium, and Germany; and the tertiary soils of the northern and central parts of France.

The third volume (pp. 405, pls. 6, fig. 1), published in 1895, is devoted to the tertiary and quaternary soils of Switzerland and the east, southeast, and southwest of France.

The book is accompanied by a geological and a statistical chart of the phosphate deposits which have been worked in France.

**Thresh, John C.** Water and water supplies. pp. xv+438. figs. 23. 12°. London, The Rebman Publishing Co., 1896.

The subjects treated in this book are: The composition and properties of water; rain and rainwater; surface and subsoil water; natural spring, deep well, and river water; quality of drinking waters; impure water and its effect upon health; the interpretation of water analyses; the pollution of drinking water; the self-purification of rivers; the purification of water on a large scale and the softening of hard water; quantity of water required for domestic and other purposes; selection of sources of water supply; the amount available from different sources; wells and their construction; pumps and pumping machinery; the storage and distribution of water; laws relating to water supplies; and rural and village water supplies. Miscellaneous data are given in an appendix.

**Wanklyn, James Alfred, and Chapman, Ernest Theophron.** Water analysis. ed. 10. pp. 200. London, Kegan Paul, Trench, Trübner & Co., 1896.

Revised and partially rewritten.

**Wollny, Ewald.** Die Zersetzung der organischen Stoffe und die Humusbildungen mit Rücksicht auf die Bodencultur (The decomposition of organic matter and the humus compounds as related to the culture of the soil). pp. 479. figs. 52. Heidelberg, C. Winter, 1897.

In this treatise the attempt is made to discuss in a systematic manner the results of all important investigations on the processes and products of the decomposition of organic matter with a view to enunciating the fundamental principles necessary to the rational management and use of the many organic materials employed in agriculture. The scope and character of the work is indicated by the following list of subjects treated: (1) The chemical and physiological processes involved in the decomposition of organic matter, including the chemical transformations; the rôle of the lower organisms and of animals in this decomposition; morphology, occurrence, distribution, and conditions of growth of the micro-organisms to which the decomposition is due; the conditions under which the decomposition of organic matter takes place; and the character of decomposition processes as they occur in nature. (2) The products of the decomposition of organic matter (humus compounds), including the source and nature of the humus of the soil; classification, and chemical, physical, and other properties of the various humus compounds; and the influence of humus on the fertility of soils. (3) Artificial means of controlling the decomposition of organic matter, including the alteration of the physical and chemical properties of the soil, the handling and management of organic manures, and the preservation of feeding stuffs.

## FERTILIZERS.

\* **Aikman, C. M., and Wright, R. P.** Potash manuring; its value to British agriculture. pp. 50. figs. 14. 8°. Glasgow, Carter & Pratt, 1896.

This is principally a summary of data obtained in experiments by Lawes and Gilbert and Voelcker in England, and Aitken, Wright *et al.*, in Scotland, intended to "show the beneficial effects that have been produced under certain conditions from the employment of potash manures." The first chapter deals with potash in soils and crops—nature and sources of potash manures; and the second with effects

of potash manuring on the common British crops, the latter including grass, clover, beans, oats, barley, turnips, potatoes, and mangel-wurzels.

**Bell, E. W.** *Mannres: Sources, composition, application.* pp. 118. cr. 8°. London (?), Cable Printing, etc., Co., 1897 (?).

One of the Cable series of agricultural text-books.

**Boasso, Pietro Francesco.** *La fecondazione dei terreni con l' azote libero dell' aria, istituita dall' agronomo Stanislao Solari* (The fertilizing of the soil with the free nitrogen of the air by the method of Stanislaus Solari). pp. 201. 32°. Mondovi, Graziano, 1897 (?).

\* **Broomhead, G. C.** *Notes on manures.* pp. 28. 12°. London, 1896.

Lecture notes explaining Laurie's cabinet of illustrative material on this subject.

\* **Caille, Louis.** *Les engrais—le fumier de ferme et les engrais chimiques* (Fertilizers—barnyard manure and chemical fertilizers). pp. 211. figs. 5. 8°. Montpellier, Camille Coulet, 1897.

This is a popular discussion of the subject from the standpoint of French agriculture. The book is divided into three parts—barnyard manure, chemical fertilizers, and formulas for chemical fertilizers. The third part is of especial interest because it recommends and explains a series of fertilizer formulas adapted to the principal farm crops on two classes of soils—calcareous and noncalcareous.

**Conradi, A.** *Düngerlehre* (Treatise on fertilizers). pp. 47. 8°. Berlin, Paul Parey, 1897.

\* **Coquillion, J.** *Traité élémentaire de l'emploi rationnelle des engrais révélé par les cartes agronomiques communales à l'usage des agriculteurs, des instituteurs chargés de l'interprétation de ces cartes* (An elementary treatise on the rational use of fertilizers). pp. 71. 8°. Dijon, Félix Rey, 1897.

A brief popular treatise, based upon communal agricultural and soil surveys.

**Grandeau, Louis.** *La fumure des champs et des jardins* (The manuring of fields and gardens). ed. 6, rev. and enl. pp. xiv + 175. 18°. Paris, Librairie du Temps, 1897.

\* **Heinrich, Reinh.** *Mergen und Mergeln* (Marl and marling). pp. 63. figs. 14. Berlin, P. Parey, 1896.

This is a prize essay prepared under the auspices of the Mecklenburg Patriotic Union. The action of lime as a plant food and the dependence of the plant upon the lime content of the soil are briefly discussed. The more important chapters of the pamphlet are devoted to the chemical and physical action of lime in the soil and to the practical features of liming and marling. An interesting chapter is added on the injurious influences of lime on lupines, in which is incorporated much data from extensive experiments on this subject by the author.

**Larbalétrier, Albert.** *Les résidus industriels employés comme engrais—industries végétales* (Industrial by-products used as fertilizers—vegetable by-products). pp. 160. 16°. Paris, Gauthier-Villars et fils, 1897.

\* **Lavaron, F.** *Traité théorique et pratique des engrais* (A theoretical and practical treatise on fertilizers). pp. ix + 221. 8°. Poitiers, P. Blanchier, 1897.

The elements which plants require for their growth are discussed in a brief simple manner. Also the various kinds of farm manures and commercial fertilizers; the physical and chemical properties of arable soils; and the fertilizer requirements of different plants. Formulas for fertilizers adapted to the plant on humus, siliceous, clayey, and calcareous soils are given. The advisability of buying unmixed fertilizing materials and the time and method of applying fertilizers; and purchase and inspection (including laws, methods, etc.) are also discussed.

**Nessler, J.** *Dünglehre für Landwirthschafts und ländliche Fortbildungsschulen, sowie zum Selbstunterricht* (Text-book on fertilizers for advanced agricultural and rural schools, as well as for self-instruction). pp. 48. 8°. Bühl (Baden), Actiengesellschaft Konkordia, 1897.

**Pick, S.** Die künstlichen Düngemittel (Commercial fertilizing materials). ed. 3. pp. viii + 245. figs. 34. 8°. Vienna, A. Hartleben, 1898.

This work discusses the manufacture of bone, horn, blood, and meat meal, potash fertilizers, sulphate of ammonia, different kinds of phosphates, Thomas slag, pou-drette, etc., as well as the occurrence of natural concentrated fertilizer materials.

\* **Reitmair, O.** Ueber Phosphorsäure-Düngung mit besonderer Berücksichtigung der wichtigsten Phosphorsäure-Dünger des Handels (Superphosphat und Thomas-schlacke) (Phosphate manuring, with special reference to the more important phosphatic fertilizers of commerce—superphosphates and Thomas slag). pp. 39. 8°. Vienna, Wilhelm Frick, 1897.

The following topics are briefly discussed in a popular manner: The phosphoric acid content of soils; the solubility of phosphoric acid in soils and fertilizers; and fertilizing with superphosphates, Thomas slag, and ground bone.

\* ———. Ueber Stickstoff-Düngung mit besonderer Berücksichtigung der wichtigsten Stickstoff-Dünger des Handels (Schwefelsaures Ammoniak und Chilisalpeter) (Nitrogen manuring, with special reference to the more important nitrogenous fertilizers of commerce—sulphate of ammonia and nitrate of soda). pp. 24. 8°. Vienna, Wilhelm Frick, 1897.

**Rümppler, A.** Die künstlichen Düngestoffe, ihre Zusammensetzung, Gewinnung und Anwendung (Commercial fertilizers, their composition, preparation, and use). ed. 4. pp. vii + 248. figs. 32. 8°. Berlin, Paul Parey, 1897.

**Stutzer, A.** Leitfaden der Düngerlehre für praktische Landwirthe (Treatise on fertilizers for practical farmers). ed. 6. pp. vii + 131. 8°. Leipzig, Hugo Voight, 1897.

\* **Vogel, J. H.** Mittlere Zusammensetzung der Düngemittel und Gründüngspflanzen (The average composition of fertilizers and green manures). 1 col. chart, 75 by 100 cm. Berlin, Paul Parey, 1897.

A useful colored wall chart showing the composition of the more common fertilizing materials and plants used for green manuring.

\* ———. Wolff's Düngerlehre (Wolff's treatise on fertilizers). ed. 13. pp. viii + 204. 8°. Berlin, Paul Parey, 1897.

This is a revision of the well-known book by a recognized authority on the subject of fertilizers.

**Wiesner, August.** Thomasschlacke und natürliche phosphate (Thomas slag and natural phosphates). pp. ix + 242. figs. 28. Vienna, A. Hartleben, 1896.

**Wright, R. P.** See **Aikman, C. M.**, p. 16.

## FIELD CROPS.

\* **Arnold, Benjamin William, jr.** History of the tobacco industry in Virginia from 1860 to 1894. pp. 86. 8°. Baltimore, 1897. (Johns Hopkins University studies in historical and political science, ser. 15, No. 1-2).

The relative rank of Virginia among the tobacco States is pointed out and the history of tobacco production and manufacture is given. The staple varieties of Virginia tobacco are noted and the economic condition and relation of the planter and the manufacturer are discussed.

\* **Bowick, Thomas, et al.** The crops. ed. 6. pp. 148. 12°. London, Vinton & Co., 189-. (Morton's handbooks of the farm No. 3.)

This book treats of the various grain, root, and fodder crops, management of pastures, destruction of weeds, and the cultivation of exceptional crops, such as hemp, hops, chicory, etc.

**Everitt, William Spencer.** Grasses and grass growing in East Anglia. pp. 154. 8°. Jarrold, 1897.

Practical hints.



\* **Goodwin**, William. Wheat growing in the Argentine Republic. pp. 75. pls. 8. 8°. Liverpool, The Northern Publishing Co., Ltd., 1895.

A description of the wheat industry in the Argentine Republic. The subject is treated from agricultural, commercial, economical, and statistical points of view.

\* **Parsons**, Charles W. Fiber-bearing plants of Florida. pp. 62. figs. 21. 8°. Savannah, Ga., 1895.

The book gives descriptions of the fiber plants susceptible of profitable cultivation in Florida, the methods of propagation, cultivation, and extraction of fibers, with notes on the fiber industries of other countries.

\* **Servier**, Audre. Guide de l'agriculteur en Algérie et en Tunisie. Résumé des principes agricoles dans l'Afrique du Nord (Guide for the agriculturist in Algeria and Tunis. A résumé of agricultural principles for northern Africa). pp. 256. 16°. Paris, Moritinee & Coloniale, 1897.

\* **Stubbs**, William C. Sugar cane. v. 1. pp. 208. figs. 28. 8°. (Batou Rouge), State bureau of agriculture and immigration, 1897.

This is a treatise on the history, botany, and agriculture of sugar cane, and the chemistry and manufacture of its juices into sugar and other products, in two volumes. This volume treats of the history, botany, and agriculture of sugar cane.

**Van den Hulle**. Le houblon (The hop). pp. 84. 4°. Gheut, 1896.

A résumé of the experiences with hop culture to the present day.

## HORTICULTURE.

\* **Amherst**, Alicia M. T. History of gardening in England. ed. 2. pp. 405. figs. 68. 4°. London, Bernhard Quaritch, 1896.

In addition to an historical sketch of gardening in England the book gives a bibliography of gardening to the year 1837 and a list of authors of works on gardening with dates of the earliest work of each author.

**Back**, K. See **Nerlinger**, T., p. 25.

\* **Bailey**, Liberty Hyde. The forcing book. pp. 266. figs. 88. 12°. New York, The Macmillan Co., 1897. (Gardencraft series.)

The work discusses forcing in general; the construction of forcing houses, including types of houses, structural details, methods of heating, and cost; the management of forcing houses, including temperature, watering, ventilating, shading, electric lighting, pollination, and insects and diseases; and the details of forcing particular vegetables, including lettuce, cauliflower, radish, asparagus, rhubarb, pea, celery, tomato, onion, beet, carrot, turnip, potato, pepino, cucumber, muskmelon, bean, eggplant, pepper, cythomandra, various pot herbs, mints, etc. The final chapter summarizes the methods of culture recommended.

\* ———. Horticulturist's rule book: A compendium of useful information for fruit growers, truck gardeners, florists, and others. New rev. ed. pp. 312. 12°. New York, The Macmillan Co., 1897. (Gardencraft series.)

\* **Bailey**, Liberty Hyde. Principles of fruit growing. pp. 508. figs. 114. 12°. New York, The Macmillan Co., 1897. (Rural Science series.)

The aim of the book is to treat the fundamental principles and practices of fruit growing in general. The subject-matter is considered under the following heads: Introductory discussion, including an inventory of fruits, the geography of fruit growing, the course of evolution of a fruit region, and the outlook for fruit growing; the location and its climate, giving special prominence to frosts and means of protection from them, the effects of windbreaks, etc.; the tillage of fruit lands; the fertility of fruit lands; the planting of fruit grounds; the secondary and incidental care of the fruit plantation; and diseases, insects, and spraying. An appendix containing a list of American books on general fruit growing is added.

\* **Bailey, Liberty Hyde.** Garden-making; suggestions for the utilizing of home grounds. pp. 417. figs. 256. 12°. New York, The Macmillan Co., 1898. (Garden-craft series.)

The book contains a chapter on such topics as preparation of the land, sowing and planting, winter protection, forcing plants, insects and diseases, etc.; a chapter on the plan of the place, including discussions of the "picture in the landscape," the fundamentals of landscape gardening, specific examples, and how the improvements are made; a chapter on planting the ornamental grounds, containing a list of ornamental plants hardy in central Michigan, and remarks by Ernest Walker on plants for floral effects, flower beds, carpet bedding, borders, annuals, bulbous and tuberous plants, hardy herbaceous perennials, climbing plants, etc.; a chapter on the fruit plantation, contributed largely by L. R. Taft, and including the grape, small fruits, northern orchard fruits, and subtropical fruits; a chapter on the vegetable garden written in large part by F. A. Wagh; and a chapter on seasonal reminders, giving monthly calendars of garden operations for the North by T. Greiner and for the South by H. W. Smith and F. H. Burnette.

———. The pruning book. pp. 530. ill. 12°. New York, The Macmillan Co., 1898.

A monograph of the pruning and training of plants as applied to American conditions.

**Baltet, Charles.** L'art de greffer (The art of grafting). ed. 6. pp. 517. figs. 202. 16°. Paris, Masson & Cie., 1898.

\* **Berne, A.** Manuel d'arboriculture fruitière (Manual of fruit tree culture). pp. 301. figs. 147. 8°. Montpellier, Camille Coulet; Paris, Masson & Cie., 1898.

The book treats of soils and fertilizers for fruit trees; planting, pruning, training, varieties, and diseases of fruit trees; the picking and storage of fruit, etc. A large part of the book is devoted to the methods of pruning and training.

**Betten, R.** Die Rose, ihre Anzucht und Pflege (The rose, its culture and care). pp. 222. figs. 138. Frankfurt a. O., Trowitzsch & Sohn, 1896.

A practical handbook of rose growing.

**Bloudeau, H.** La domiculture. Nouvelle méthode de culture intensive des plantes en appartements (A new method of intensive culture of house plants). pp. 6 + 334. 18°. Paris, Doin, 189-.

\* **Bois, Désiré.** Atlas des plantes de jardins et d'appartements exotiques et Européennes (Atlas of exotic and European garden and house plants). pp. 432. col. pls. 320. 8°. Paris, Paul Klincksieck, 1896.

The text gives, in a popular style, descriptions, uses, and methods of culture and propagation of the ornamental plants most commonly grown. The colored plates, representing 370 plants, are all from original drawings. In some cases the whole plant is figured, in others the flowering branches are shown. Most of the drawings show the flower structure as seen in partly dissected flowers. In the case of annuals and biennials seeds and seedlings are also figured.

\* **Bohnhof, E.** Dictionnaire des orchidées hybrides (Dictionary of hybrid orchids). pp. 139. 12°. Paris, Octave Doin, 1895.

The first part of this book contains an alphabetical list of all artificial and natural orchid hybrids known to the author up to the year 1895, the name of the originator or introducer of each, the date of its introduction, and the names of its seed parent and pollen parent. The second part of the book gives tables to facilitate finding the parentage and synonyms of hybrids, etc. The title-page, preface, and all explanations of tables are given in French, German, and English.

**Böttner, Johannes.** Praktisches Lehrbuch des Obstbaus (A practical handbook of fruit-tree culture). pp. 574. figs. 557. 8°. Frankfurt, 1898.

\* ———. Praktisches Lehrbuch des Spargelbaus (Practical handbook of asparagus culture). pp. 100. figs. 40. 8°. Frankfurt a. O., Trowitzsch & Sohn, 1897.

This treats of planting, culture, manuring, harvesting, forcing, varieties, diseases, and insect enemies of asparagus.

\* **Bouttes, J. de.** *Études de viticulture nouvelle* (Studies in the new viticulture). pp. 143. ill. 16°. Toulouse, Loubens & Trinchart, 1897.

The author considers the new hybrid grapes resistant to black rot. Notes are given on grafting.

**Bracci, F.** *Manuale di olivicoltura ed oleificio* (Manual of olive culture and of olive-oil manufacture). pp. 200. Milan, F. Vallardi, 1894.

**Buche, F.** *Der praktische Zwergobstbau. Anleitung zum nutzbringenden Betriebe des Zwergobstbaues für jeden Haus und Gartenbesitzer* (The practical culture of dwarf fruits. Directions for the profitable conduct of dwarf fruit culture for house and garden proprietors). pp. 128. ill. 8°. Strassburg, Strassburger Druckerei, und Verlagsanstalt.

\* **Burpee, W. Atlee, editor.** *How to grow melons for market.* ed. 8. pp. 81. figs. 25. 12°. Philadelphia, W. Atlee Burpee & Co., 1897.

This is compiled from three prize essays on the subject, and the experience of the editor is added. The book gives the details of growing and marketing muskmelons and watermelons and lists of approved varieties.

\* **Bush and Son and Meissner.** *Illustrated descriptive catalogue of American grapevines. A grape grower's manual.* ed. 4. pp. 198. figs. 175. St. Louis, R. P. Studley & Co., 1895.

The work has been revised and enlarged. An article on the diseases of the grape and their treatment, prepared by B. T. Galloway, has been added.

\* **Carrière, Élie Abel.** *Encyclopédie horticole* (Encyclopedia of horticulture). pp. 558. 12°. Paris, Librairie agricole de la maison rustique.

A cyclopedic dictionary of horticultural terms.

**Cavara, Fridiano.** *Funghi mangerecci e funghi velenosi* (Edible and poisonous fungi). pp. 200. pls. 43. 16°. Milan, Hoepli, 1897.

**Chabanne, G., and Choulet, A.** *Culture des chrysanthémums* (Chrysanthemum culture). pp. 64. ill. 8°. Lyon, Rivoire pere et fils (?), 1896 (?).

**Choulet, A.** See **Chabanne, G.** (above).

**Cogniaux, Alfred.** See **Linden, Lucien**, p. 24.

\* **Coste-Floret, P.** *Les travaux du vignoble* (Viticulture). pp. 418. figs. 121. 8°. Montpellier, Camille Coulet; Paris, Masson & Cie., 1898. (Bibliothèque du "Progrès agricole et viticole.")

The book treats of the propagation and culture of grapes, soils and fertilizers, insects, diseases and the like.

\* **Crale, D.** *Tea: A text-book of tea planting and manufacture; history and development of the industry, cultivation of the plant, preparation of leaf for market, botany and chemistry of tea, laws affecting labor in gardens, etc.* pp. 254. ill. 8°. London (?), Lockwood, Crosby & Son (?), 189-.

**Cummins, D.** See **Day, J. W.**, p. 22.

\* **Cuthbertson, William, editor.** *The dahlia: Its history and cultivation.* pp. 81. pls. 9. fig. 1. 12°. London, Maemillan & Co., Ltd., 1897.

The book contains an introduction by W. Cuthbertson and articles on the history of the dahlia by R. Dean, the botany of the dahlia by J. Ballantyne, the propagation of the dahlia and exhibiting the dahlia by S. Jones, the cultivation of the dahlia by R. Fife, and the future of the dahlia and a catalogue of varieties and selections for special purposes by W. Cuthbertson.

\* **Dafert, Franz W.** *Erfahrungen über rationellen Kaffeebau* (Experiences in coffee culture). pp. 36. figs. 8. 8°. Berlin, Paul Parey, 1896.

This contains a short account of the experience in coffee culture of the Agricultural Institute of the State of São Paulo in Campinas in the years 1888 to 1895. The following topics are considered: The limits of yield of a coffee plantation, on what does it depend, and how can it be increased? Under the last head are included questions of manuring from a theoretical and practical standpoint.



\* **Daniel, Lucien.** Recherches anatomique sur les greffes herbacées et ligneuses (Anatomical researches on herbaceous and woody grafts). pp. 104. pls. 3. figs. 17. 8°. Rennés, F. Simon, 1896.

\* **Darlington, E. D., and Moll, L. M.** How and what to grow in a kitchen garden of 1 acre. ed. 8. pp. 198. figs. 70. 12°. Philadelphia, W. Atlee Burpee & Co., 1895.

This consists of two prize essays on vegetable growing, edited by W. A. Burpee. Cultural directions for a large number of garden vegetables and notes on varieties recommended by the authors are given.

\* **Dauthenay, H.** Les géraniums (*Pelargonium zonale et inquinans*). Description et culture (Geraniums (*Pelargonium zonale* and *P. inquinans*); descriptions and culture). pp. vi+297. figs. 22. 18°. Paris, Doin, 1897.

An alphabetical list of varieties is appended.

\* **Day, J. W., Cummins, D., and Root, A. I.** Tomato culture. pp. 135. figs. 28. 16°. Medina, Ohio, A. I. Root, 1892.

The first part of this book deals with tomato culture in the South for early Northern markets. The construction of hotbeds, the details of growing tomatoes, best varieties, etc., are considered. The second part has to do with raising tomatoes in the North for canning factories. The third part deals with intensive plant growing in general.

**Dean, Richard.** The dahlia: Its history and cultivation. 12°. New York and London, The Macmillan Co., 1896.

**Dreer, Henry A.** Open-air vegetables. pp. 148. figs. 60. 12°. Philadelphia, The author, 1897.

The book gives the culture requirements of the vegetables commonly grown out of doors. The vegetables are grouped according to their botanical relationships.

———. Vegetables under glass. ed. 2. pp. 101. figs. 44. 12°. Philadelphia, The author, 1896.

The management of greenhouses, hotbeds, and cold frames and the cultivation of forcing house vegetables.

**Dunn, Malcolm.** See **Williamson, William**, p. 28.

\* **Gallardo, Carlos R.** La viticultura y la vinificación en la Provincia Salta (Viticulture and vinification in the Province of Salta). pp. 69. pls. 7. 8°. Buenos Ayres, 1897.

\* **Goff, E. S.** Principles of plant culture. pp. 276. figs. 173. 12°. Madison, Wis., The author, 1897.

This is an elementary treatise designed as a text-book for beginners in agriculture and horticulture. The various phases in the life cycle of plants are traced from germination to the decline of growth and rest, and the effect of unfavorable environmental conditions upon plant growth is shown. The various operations to be followed in plant propagation, transplanting, and pruning are described, and the methods of plant breeding are briefly given. Simple experiments are suggested, and a syllabus of laboratory work is added as an appendix.

\* **Gomez, Gabriel.** Cultivation and preparation of coffee. Trans. by W. Thompson. pp. 148. figs. 26. Mexico, Department of Fomento, 1894.

The history, botany, and chemistry of coffee; its soil, manurial, and climatic requirements; planting, pruning, cultivation, and enemies of the coffee tree; harvesting, preparing, and marketing the crop; and statistics of coffee production are given.

\* **Gorkom, Karel Wessel van.** Thee (Tea). ed. 2, enl. pp. 80. 12°. Haarlem, De Erven Loosjes, 1897.

The tea plant is described and its geographical distribution, culture, and use discussed. Methods for preparation, packing, and marketing of the crop are suggested, and statistics on the exportation of tea from various countries given in tables.

**Grasset, E., editor.** Plants and their application to ornament. 12 pts. in portfolio. London, Chapman, 1897.

\* **Green, Samuel B.** Vegetable gardening. A manual on the growing of vegetables for home use and marketing, prepared especially for the classes of the School of Agriculture of the University of Minnesota. pp. 224. figs. 115. St. Paul, Webb Publishing Co., 1896.

The work discusses the location of the garden, soil, manures, rotation of crops, preparation of land, etc.; implements, sowing, transplanting, kitchen gardening, seed growing, development of varieties, hotbeds, greenhouses, injurious insects and remedies; and the culture, methods of gathering, and storing of the different kinds of vegetables. Finally there are given a monthly calendar and tables showing the weight in ounces of vegetable seeds to the quart, the number of seeds per ounce, quantity of seed to be sown per acre, the time required for the different varieties of seeds to germinate, and the relative vitality of good seed of the more common vegetables.

\* **Greiner, Tuisco.** New onion culture; a story for gardeners young and old. ed. 4. pp. 89. figs. 31. 12°. 1896.

**Griffon, E.** Le jardin potager. Traité de la culture des plantes maraicheres à l'air libre et sur couche (The kitchen garden: A treatise on the culture of garden vegetables in the open air and in hotbeds.) pp. 190. figs. 100. 8°. Tournai, Etienne Griffon, 1897.

**Grignan, Georges.** See **Linden, Lucien**, p. 24.

\* **Harms, Friedrich.** Flieder und Asparagus (Lilacs and asparagus). pp. 94. pls. 4. figs. 29. 8°. Erfurt, Ludwig Möller, 1897.

The book treats of the propagation, culture, and forcing of lilacs and ornamental asparagus and gives descriptions of the principal species of each.

\* **Hillhouse, Lizzie Page.** House plants and how to succeed with them: a practical handbook. pp. 220. figs. 70. 12°. New York, A. T. Delamare Printing and Publishing Co., 1897.

The book discusses the varieties, propagation, and culture of a large number of ornamental plants suitable to house culture.

\* **Hollister, E. J.** Livingston's celery book. pp. 96. figs. 19. 12°. Columbus, Ohio. A. W. Livingston's Sons, 1898.

The book contains directions for the preparation of the soil, culture, and marketing of celery, based on twenty years' experience with the crop.

\* **Horticultural directory and yearbook for 1898.** ed. 39. pp. 480. 12°. London, Journal of Horticulture, 1898.

The directory contains alphabetical lists of the nurserymen, seedsmen, and florists, of the gardeners, of horticultural builders, engineers, of botanical gardens and public parks, of the seats of the nobility, and of the botanical, horticultural, and flora societies of Great Britain and Ireland; county lists of nurserymen, seedsmen, and florists in England and Wales, in Scotland, in Ireland, and in the Channel Islands, and of the seats of the nobility in Great Britain and Ireland; lists of the principal nurserymen, seedsmen, and florists of European countries and the British colonies, of landscape gardeners, and of commission merchants and salesmen at the Covent Garden Market, London, and tables, receipts, and miscellaneous information of interest to horticulturists.

\* **Hutchins, W. T.** Sweet peas up to date, with a complete description of all known varieties, including novelties for 1897. pp. 72. figs. 35. 12°. Philadelphia, W. A. Burpee & Co., 1897.

This gives cultural directions and a catalogue describing all known varieties of sweet peas.

\* **Johnson**, Joseph Forsythe. Residential sites and environments; their conveniences, gardens, parks, planting, etc. ill. 4°. New York, A. T. Delamare, 1898.

The book is divided into three parts. Part 1 treats of residential sites and environments, including such topics as thinning out woodlands, model home ground, beauties of plant life, special effect of trees and shrubs, and of carpet plants. Part 2 is entitled planting and introduction to undulations and treats of planting and transplanting trees and large plants, mass planting, grouping in boundaries, planting borders, herbaceous gardens, rockeries, aquatic and bog garden, perpetual effect, etc. Part 3 treats of villa gardens and public grounds under such heads as small grounds, corner lots, planting a church front, locating entrance roadways, planting a small garden, making the most of the back, a town square, etc.

Some 50 plans and diagrams are given.

\* **Koopman**, Karl. Grundlehren des Obstbaunschnittes (Elements of tree pruning). pp. iv+122. pls. 24. 8°. Berlin, Paul Parey, 1896.

The data on which the discussion is based were obtained from experiments at the Königlichen Gärtner-Lehranstalt zu Potsdam.

\* **Kühn**, B. L. Die rationelle Obstverwerthung im Haushalte und gewerblichem Betriebe (The rational utilization of fruits in the household and in industrial pursuits). pp. 209. figs. 60. 8°. Berlin, F. Cynamon, 1897.

The book treats of the selection of varieties of fruits; picking, sorting, packing, storing, and shipping fruits; the manufacture of dried fruits, jellies, ciders, marmalades, preserves, etc. Many illustrations are given of the implements and apparatus used.

\* **Linden**, Lucien, **Cogniaux**, Alfred, and **Grignan**, Georges. Les orchidées exotiques et leur culture en Europe (Exotic orchids and their culture in Europe). pp. 1019. figs. and pls. 141. 4°. Brussels and Paris, Octave Doin, 1894.

The work is divided into four parts. The first part treats of the classification and geographical distribution of orchids, with a bibliography of the subjects. The second part has to do with the history of the cultivation of orchids, the natural habitat of orchids, and their importation. The third part is a detailed discussion of the culture of orchids in Europe. The fourth part gives descriptions of the principal orchids grown in Europe.

\* **Lupton**, J. M. Cabbage and cauliflower for profit. pp. 122. figs. 53. 12°. Philadelphia, W. Atlee Burpee & Co., 1894.

The book treats of the culture and marketing of cabbage and cauliflower, their insect enemies, etc.

**McGregor Bros.** McGregors' new book on growing flowers. pp. 104. 12°. Springfield, Ohio, The authors, 1897.

A book of practical suggestions on the care and management of flowers in the house and garden, with culture directions for such plants as require special treatment.

**Meech**, W. W. Quince culture. new ed. pp. 180. ill. New York, Orange Judd Co., 189-.

A handbook of the propagation and cultivation of the quince, with descriptions of its varieties, insect enemies, and diseases.

**Meissner.** See **Bush and Son**, p. 21.

**Moll**, L. M. See **Darlington**, E. D., p. 22.

**Monkmeyer**, W. Bog and water plants. pp. 190. ill. Berlin, Gustav Schmidt, 1897.

An account of the history, culture, and uses of all plants considered available for the ornamentation of water gardens.

\* **Mottet**, S. Petit guide pratique de jardinage (Practical guide to gardening). ed. 2, enl. pp. 362. figs. 317. 12°. Paris, Octave Doin, 1897.

The book treats of vegetable and fruit culture, floriculture, and the culture of ornamental trees and shrubs.



**Nerlinger, T., and Back, K.** Der landwirthschaftliche Obstbau. Allgemeine Grundzüge zum rationellen Betriebe desselben für Landwirthe, Baumzüchter, Semimaristen, etc. (Agricultural fruit growing. General outlines for the rational management of fruits for farmers, nurserymen, seedsmen, etc.). ed. 4, rev. pp. viii+244. figs. 97. 8°. Stuttgart, Eugen Ulmer, 1897.

**Noter, Raphael de.** Les plantes bulbenses et leur culture (Bulbous plants and their culture). pp. 36. figs. 21. 18°. Paris, Bornemann, 1897.

———. La taille des arbres fruitiers (Pruning fruit trees). pp. 63. figs. 16. 18°. Paris, Bornemann, 189—.

———. Les oranges, citronniers, cédratiers et autres aurantiacées à fruits comestibles; leur culture dans la région méditerranéenne et dans le nord) Oranges, lemons, citrons, and other edible citrus fruits; their culture in the Mediterranean region and in the north. pp. 202. figs. 69. 12°. Paris, Octave Doin, 1896.

**Opoix, O.** La culture du poirier (Pear culture). 12°. pp. 271. figs. 112. Paris, Octave Doin, 1896.

The book treats of the history of the pear, soils, manuring, cultivating, pruning, training, grafting, harvesting, diseases, varieties, and the like.

**Otto, R.** Die Düngung der Gartengewächse mittelst künstlicher Düngemittel. Praktische Anleitung zur rationellen Verwendung künstlicher Düngemittel (The manuring of garden plants by means of artificial fertilizers. Practical directions for the use of artificial fertilizers). pp. vi+62. figs. 7. 8°. Proskau, A. Kalesse, 1897.

**\*Parry, John R.** Nuts for profit. pp. 157. figs. 42. 12°. Parry, New Jersey, 1897. A treatise on the propagation and cultivation of nut-bearing trees adapted to successful culture in the United States. The work is largely a compilation of extracts from the writings of various authors on nut culture.

**\*Parsons, Samuel, jr.** Landscape gardening. pp. xxii+329. figs. 200. 8°. New York and London, G. P. Putnam's Sons, 1895.

The book contains suggestions on lawns and lawn planting, laying out and arrangement of country places, large and small parks, cemetery plats, and railway-station lawns; deciduous and evergreen trees and shrubs, the hardy border, bedding plants, rock work, etc.

**\*Passy, Pierre.** Traité d'arboriculture fruitière (A treatise on fruit-tree culture). v. 3. pp. 600. figs. 300. 18°. Paris, J. B. Baillière et fils, 1897.

The work is in three volumes. The first volume treats in a general way of the establishment of a nursery and fruit garden, planting and arrangement of trees, grafting, pruning, etc. The second and third volumes have to do with particular fruits, considering in the case of each fruit special methods of pruning, the principal varieties, and the insect and fungus enemies. The second volume deals with the pear, apple, quince, medlars, service tree, etc. The third volume includes the peach, apricot, plum, cherry, almond, grape, gooseberry, currant, fig, walnut, chestnut, hazelnut, etc.

**\*Peacock, Lawrence K.** The dahlia; a practical treatise on its habits, characteristics, cultivation, and history. pp. 56. figs. 11. 8°. Atco, N. J., W. P. Peacock, 1896.

The book treats of the propagation, classification, culture, and varieties of the dahlia, with chapters on dahlia exhibitions, the American Dahlia Society, etc.

**\*Peck, Charles Horton.** Mushrooms and their use. pp. 80. figs. 32. 8°. Cambridge, Mass., Cambridge Botanical Supply Co., 1897.

An introduction to the study of mushrooms, a reprint of a series of articles in *Cultivator and Country Gentleman*, May 31–September 20, 1894.

**\*Plumpe, F. J. M.** Der Gartenbau im deutschen Reiche: Handels-Adressbuch der Handelsgärtnereien, Samenhandlungen, Baumschulenbesitzer Deutschlands; mit Angabe der Gartenbauvereine (Horticulture in Germany; business directory of

market gardeners, seedsmen, and nurserymen of Germany; with a list of horticultural societies). ed. 4, enl. pp. 356. 12°. Berlin, The author, 1893.

\* **Powell, E. C.** Fruit packages. pp. 62. figs. 78. 12°. New York, The Rural Publishing Co., 1893. (The Rural Library series.)

This gives the current styles and sizes of packages in use in various parts of the country, the methods of packing in various sections, directions for packing, and a directory of fruit-package manufacturers.

\* **Pucci, Angiolo.** Piante e fiori sulle finestre, sulle terrazze e nei cortili. Cultura e descrizione delle principali specie e varietà (Plants and flowers for the window, terrace, and yard. Culture and descriptions of the principal species and varieties). ed. 2. pp. 222. ill. 8°. Milan, U. Hoepli, 1892.

**Roda, F.** Manuale di floricoltura (Manual of floriculture). ed. 2. rev. and enl. by G. Roda. pp. 264. figs. 87. 8°. Milan, U. Hoepli, 1897.

\* **Rolfs, P. H.** Vegetable growing in the South for Northern markets. pp. 255. figs. 38. 12°. Richmond, Va., The Southern Planter Publishing Co., 1896.

The book consists of revised lectures to classes in horticulture. It is designed to give concise directions for the preparation of soil, use of fertilizers, and planting and care of vegetables to obtain the earliest crops and to give the best methods of packing for shipping, of raising seeds, etc. Special attention is given to the preparation and use of fertilizers and the amounts required for different crops, a specific formula being given for each vegetable considered.

**Root, A. I.** See **Day, J. W.**, p. 22.

\* **Rose, Nils Jönsson.** Lawns and gardens: How to plant and beautify the home lot, the pleasure ground, and garden. pp. 414. pl. 1. figs. 172. 8°. New York and London, G. P. Putnam's Sons, 1897.

The first part treats of the principles and practice of landscape art with chapters on the following topics: The study of natural scenery, implements, the plan, grading, drives and walks, grouping and massing trees and shrubs, detached groups and specimen plants, the proper use of herbaceous plants, the lawn, rocks and water, flower beds and borders, hedges, buildings, and the like. The second part treats of the best hardy ornamental plants for the temperate zone of North America, under the following chapter heads: Deciduous trees, coniferous trees, flowering trees, ornamental shrubs, creepers and vines, and herbaceous plants. The numerous plans and illustrations are prepared by the author.

\* **Rudolph, Jules.** Les Nepenthes et leur culture; étude botanico-horticole sur les Nepenthes (The Nepenthes and their culture; a botanical and horticultural study of the Nepenthes). pp. 31. figs. 5. 8°. Paris, Octave Doin, 1896.

\* **Stiffingfellow, H. M.** The new horticulture. pp. 216. figs. 16. 8°. Galveston, Texas, The author, 1896.

The author gives his observations, ideas, and theories in regard to numerous horticultural practices.

\* **Sutherland, George.** South Australian vinegrower's manual; a practical guide to the art of viticulture in South Australia. pp. 176. pls. 4. 8°. Adelaide, C. E. Bristow, Government Printer, 1892.

This manual gives directions for selection of soil and situation and for planting, pruning, and training grapes. Notes are given on a number of varieties of grapes.

\* **Taft, Levi R.** Greenhouse management. pp. 382. figs. 128. 12°. New York, Orange Judd Company, 1898.

This is a manual on the forcing of flowers, vegetables, and fruits in greenhouses and on the propagation and care of house plants. Chapters are devoted to the insect enemies and fungus diseases of greenhouse plants and on the preparation and use of insecticides and fungicides.

\* **Thomas, John J.** The American fruit culturist. ed. 20. pp. xv+758. figs. 796. 8°. New York, Wm. Wood & Co., 1897.

The work has been revised and enlarged by W. H. S. Wood. Numerous sections contained in earlier editions—for instance, those on raising or ripening under glass, preserving fruit, lists of fruits grown in houses, selected lists for different localities, the monthly calendar of work, etc.—have been omitted from this edition and new chapters have been added on wild fruits, nuts, etc. The section on subtropical fruits has been contributed by E. H. Hart, of Florida; the chapter on spraying by L. H. Bailey, and the description of Russian apples by J. L. Budd.

\* **Thompson, Fred. S.** Rhubarb, or pieplant, culture. pp. 76. figs. 23. 12°. Milwaukee, J. H. Yewdale & Sons Co., 1894.

The book treats of field culture and forcing of rhubarb, profits of rhubarb culture as compared to the profits of other crops, varieties of rhubarb, etc.

**Troucet, L. J.** Le jardin potager (The kitchen garden). ed. 2. pp. 181. figs. 190. 8°. Paris, Larousse, 1897.

\* **Truffaut, Georges.** Sols, terres, et composts utilisés par l'horticulture (Soils, earths, and composts employed in horticulture). pp. 308. figs. 3. 12°. Paris, Octave Doin, 1896.

The subject is treated in two parts. The first part is a general discussion of soils, their formation and relation to plant growth. It includes chapters on the relation of plants to the soil, general considerations in regard to soils, the physical properties of soils and their modification, the chemical composition of soils, or the soil as a source of plant food. The second part of the book considers the different types of soils, enumerates the horticultural plants for which each type is suited, indicates the fertilizer to be used with each, discusses the preparation and use of artificial soils and composts employed in horticulture, and gives the chemical composition of a number of fruits, vegetables, and ornamental plants. Some of the principles discussed in the work are illustrated by a description of the culture of azaleas.

**Udale, J.** Gardening for all: A handbook on growing vegetables and fruit, and the prevention and destruction of insect pests of the garden and selection of window plants and hardy flowers. pp. 154. 8°. London, Simpkin, 1897.

**Ulsamer, J. A.** Unsere essbaren Pilze (Edible fungi). pp. 40. figs. 5. 8°. Kempten, J. Kosel, 189-.

An introduction to the study of the more common edible fungi.

\* **Van Renssalaer, Mrs. Mariana Griswold.** Art out of doors; hints on good taste in gardening. pp. 399. 12°. New York, Charles Scribner's Sons, 1894.

The subject is considered under the following heads: The art of gardening, aims and methods, the home grounds, close to the house, roads and paths, piazzas, formal flower beds, formal gardening, a word for architecture, outdoor monuments, cemeteries, the beauty of trees, four trees, a word for the axe, the love of nature, a word for books and the artist, with an appendix of books on the gardening art.

\* **Viviand-Morel, Joseph Victor.** Instructions sur la culture des chrysanthèmes à la grande fleur (Directions for the culture of large-flowered chrysanthemums). ed. 2. pp. 48. 16°. Paris, Octave Doin, 189-.

In this edition a chapter on hybridizing chrysanthemums has been added.

\* **Watt, John.** The pests and blights of the tea plant. pp. iii + 467 + xvii. figs. 11. 8°. Calcutta, Superintendent Government Printing, India, 1898.

A report of investigations conducted in Assam and Kangra. The culture of the tea plant is discussed with special reference to diseases and insect pests.

**Wendelen, C.** La culture de l'asperge (The culture of asparagus). pp. 34. ill. 12°. Brussels, Vanbuggenhoudt, 1897.

**Wendisch, E.** Die Champignonskultur in ihrem ganzen Umfange (Mushroom culture). ed. 2. pp. 153. figs. 94. 8°. Neudamm, J. Neumann, 1897.



\* **Williamson, William, and Dunn, Malcolm.** The horticultural handbook and exhibitors' guide. A treatise on cultivating, exhibiting, and judging plants, flowers, fruits, and vegetables. ed. 2. pp. 248. 12°. Edinburgh and London, William Blackwood & Sons, 1895.

This gives concise directions for the culture and preparation of a large number of plants for exhibition purposes, with notes on judging exhibits.

\* **Winkler, Herbert G.** Vegetable forcing. pp. 157. 12°. Columbus, Ohio, The Winkler Book Concern, 1896.

The book is divided into three parts. The first part deals with the management of greenhouse crops, including lettuce, tomatoes, cucumbers, radishes, rhubarb, asparagus, eggplant, celery, peas, and beans. It discusses methods of culture employed in forcing the various vegetables and gives the varieties of each that are best suited for forcing. The second part of the book has to do with the construction of forcing-houses and methods of heating and watering. The third part considers the construction and use of hotbeds and cold frames.

A very considerable part of this work is taken from other books and from experiment station publications. In a few cases no credit is given for the matter borrowed, although the original phraseology has been but slightly modified.

\* **Wood, Sammel.** The tree pruner. ed. 3. pp. 153. figs. 65. 12°. London, Crosby, Lockwood & Son, 1893.

This treats of the methods of pruning and training fruit trees, park trees, shrubs, herbaceous plants, etc., as practiced in England.

\* ———. The tree planter and plant propagator. ed. 3. pp. 188. figs. 42. 12°. London, Crosby, Lockwood & Son, 1894.

A manual on the propagation of forest trees, fruit trees, flowering shrubs, pot herbs, etc.

**Woodward, R. T.** Book on horticulture; the raising of large and small fruits, the diseases of the same, and the making and care of lawns. pp. 74. Boston, R. T. Woodward, 1897.

**Wright, S. T.** Fruit culture for amateurs. pp. 252. figs. 146. 8°. London, L. Upcott Gill, 1897.

A handbook on growing fruits in the open air and under glass, with an appendix by W. D. Drury on insect and other pests injurious to fruit trees.

\* **Yorba, J.** Mexican coffee culture. ed. 2. pp. 64. 12°. Mexico, Morguia Printing Office, 1895.

The history and botanical characters of the coffee plant, the soil, cultivation, preparation of the beans, etc., are given.

## FORESTRY.

**Büsgen, M.** Bau und Leben unserer Waldbäume (Life and growth of forest trees). pp. viii + 230. figs. 100. Jena, Gustav Fischer, 1897.

\* **Curtis, Charles E.** Practical forestry and its bearing on the improvement of estates. ed. 2. pp. 124. London, Lockwood, 1898.

\* **Foerster, F. von.** Die Korbweidenkultur und ihr wert für die Landwirthschaft der östlichen Provinzen Preussens (Osier willow culture and its agricultural value in the eastern Prussian provinces). pp. 45. 8°. Berlin, Paul Parey, 1895.

**Fürst, Hermann.** Die Pflanzenzucht im Walde (Plant propagation in forests). ed. 3, rev. pp. 368. figs. 52. 8°. Berlin, Julius Springer, 1897.

A handbook for foresters and students of forestry.

\* **Gerschel, J.** Deutsch-französische und französisch-deutsche Forst-Terminologie (German and French forest terminology). ed. 3, eul. pp. 87. 12°. Paris, 1896.

**Griffon.** Cours arboriculture (Tree growing). ed. 3, rev. and eul. pp. 266. figs. 100. 8°. Tournai, 1895.

\* **Hess, Richard.** Eigenschaften und forstliche Verhalten der wichtigeren in Deutschland einheimischen und eingeführten Holzarten (Characteristics and forest relations of the indigenous and introduced species of forest trees). ed. 2. pp. 238. 8°. Berlin, 1895.

\* **Krahe, J. A.** Lehrbuch der rationellen Korbweidenkultur (Rational osier culture). Edited by H. von Vliegen. pp. 244. pls. 9. 8°. Aachen, Rudolf Barth, 1897.

\* **Lizius, Maximilian.** Handbuch der forstlichen Baukunde (Forestry handbook), 8°. Berlin, 1896.

\* **Mathieu, A.** Flore forestière (Forest flora). ed. 4. 8°. Paris, J. B. Baillière et fils, 1897.

Describes and gives the history of the indigenous arborescent plants of France.

**Piccioli, Lodovico.** La cultura dei salicio (Willow culture). pp. vii+247. figs. 46. Firenze, S. Landi, 1896.

**Rizzi, P.** Tecnologia forestale ed utilizzazione dei boschi (Forest technology and the utilization of wood). v. 1, pp. vii+221, ill.; v. 2, pp. 110, ill. 16°. Milan, Francesco, Vallardi, 1897-98.

\* **Tubeuf, Karl Freiherr von.** Die Nadelhölzer mit besonderer Berücksichtigung der in Mitteleuropa winterharten Arten (Winter hardy conifers for central Europe). pp. vii+164. figs. 100. 8°. Stuttgart, E. Ulmer, 1897.

**Webster, A. D.** Hardy coniferous trees. London, Hutchinson & Co., 1897.

A handy popular guide to hardy conifers. Concise descriptions, nomenclature, synonymy, and best methods for cultivation are given. The commercial aspect of conifers, quality of British trees, propagating, and enemies of conifers are discussed.

## SEEDS AND WEEDS.

**Amstadt, A.** Die Bekämpfung des Unkrautes (Weed destruction). pp. 43. Harsleben, Halberstadt, J. Briest, 1896.

\* **Bruijning, F. F., jr.** Sur l'examen des semences commerciales d'herbe et de trèfle au point de vue de leur pureté et sur les impuretés qu'on y rencontre (The examination of commercial seeds of herbs and clovers). pp. 44. 4°. Haarlem, 1896.

\* **Doerstling, P.** Die Rübensamenzucht, kurzes Handbuch (A handbook to beet seed improvement). pp. 46. 8°. Berlin, 1897.

\* **Feldmann, Wilhelm.** Beiträge zur Kenntniss der Individualität des Saatkorns bei Weizen, Gerste und Erbsen (Contribution to the knowledge of the individuality of the seeds of wheat, barley, and peas). pp. 98. pl. 1. 8°. Bonn, Friederich Cohen, 1897.

The size and absolute weight were found to be important factors in influencing the production.

\* **Perseke, K.** Anleitung zur Bekämpfung des Unkrautes (Introduction to weed destruction). pp. 48. 8°. Berlin, 1896.

## DISEASES OF PLANTS.

**Balthauser.** See **Kirchuer, Oskar**, p. 30.

**Breda de Haan, J. van.** De bibitziekte in de Deli-tobak veroorzaakt door *Phytophthora nicotianæ* (The disease of tobacco caused by *Phytophthora nicotiana*). pp. 107. 4°. Batavia and Gravenhage, 1896.

**Brizi, U.** Le malattie della vite e modi di combatterle (The parasitic diseases of the grape and methods for their prevention). pp. 215. ill. 16°. Milan, Vallardi, 1896.

**Cooke**, Mordecai Cubitt. Rust, smut, mildew, and mold. An introduction to the study of microscopic fungi. ed. 6. pp. 270. col. pls. 269. 8°. London, W. H. Allen, 1897.

\* **Eriksson**, Jakob, and **Henning**, Ernst. Die Getreideroste, ihre Geschichte und Natur sowie Massregeln gegen dieselben (The grain rusts of cereals, their history, nature, and means for combating them.) pp. 463. pls. 14. figs. 5. 8°. Stockholm, P. A. Norstedt & Söner, 1896.

**Henning**, Ernst. See **Eriksson**, Jakob (above).

\* **Hollrung**, Max. Handbuch der chemischen Mittel gegen Pflanzenkrankheiten; Herstellung und Anwendung im Grossen (Handbook of fungicides; their preparation and use on an extended scale). pp. 178. 8°. Berlin, Paul Parey, 1898.

**Kirchner**, Oskar, and **Balthauser**. Atlas der Krankheiten und Beschädigungen unserer landwirthschaftlichen Kulturpflanzen (Atlas of the diseases and injuries of cultivated plants). pp. iii+62. col. pls. 22. Stuttgart, E. Ulmer, 1897.

This atlas illustrates the principal diseases and other destructive injuries to leguminous plants and other forage plants, vegetables, fruits, etc.

**Marchal**. Les maladies cryptogamiques des plantes cultivées (Parasitic diseases of plants). pp. xvi+104. ill. 8°. Brussels, 1896.

**Massee**, George. British fungus flora—a classified text-book of mycology. v. 4. pp. viii+522. London, Geo. Bell & Sons, 1895.

**Pinolini**, D. La ruggine dei cereali (The rusts of cereals). pp. 20. ill. 8°. Novara, 1897.

**Poggi**, Tito. Alcuni mali del frumento (Some diseases of cereals). ed. 2. pp. 68. 16°. Casale, 1897.

**Prillieux**, Ed. Maladies des plantes agricoles et des arbres fruitiers et forestiers causées par des parasites végétaux (The parasitic diseases of cultivated plants). v. 2. pp. 596. 8°. Paris, Firmin-Didot et Cie., 1897.

\* **Sirodot**, E. Maladies des arbres fruitiers (Diseases of fruit trees). ed. 2. pp. 166. ill. 12°. Paris, Octave Doin, 1897.

\* **Wakker**, J. H., and **Went**, F. A. F. C. De ziekten van het suikerriet op Java (Diseases of sugar cane in Java). pp. 217. pls. 25. large 8°. Leyden, E. J. Brill, 1898.

The author reports 22 diseases of sugar cane, dividing them into diseases of the stem, leaf sheath, leaf blade, and root. In addition to the characterization of the diseases a description of the new species of fungi causing them is given, together with a brief list of the fungus and myxomycetes which are known to live saprophytically on the sugar beet in Java.

**Went**, F. A. F. C. See **Wakker**, J. H. (above).

## ENTOMOLOGY.

**Acloque**, A. Les insectes nuisibles (Injurious insects). pp. 192. figs. 67. 8°. Paris, Felix Alcan, 1896.

A short account of injurious insects—not always the most common—affecting field, garden, and house.

\* **Adler**, Hermann. Alternating generations, a biological study of oak galls and gallflies. Trans. by Charles R. Straton. pp. 198. pls. 3. 12°. Oxford, Clarendon Press, 1894.

This gives an account of early observations on the subject and the methods of study employed, as well as descriptions of the Cynipidæ observed; also a table of alternating generations, a chapter on gall formation, one on the ovipositor and the egg, and one on the grouping of the Cynipidæ. An appendix on *Cynips kollari*, a synoptical table of galls, and a classification of Cynipidæ. A bibliography is added by the translator.

**Barrett**, Charles G. The Lepidoptera of the British Islands. v. 4. *Heterocera noctuæ*. pp. 404. pls. 48. 8°. London, L. Reeve & Co., 1897.



\* **Bruner, Lawrence.** Preliminary introduction to the study of entomology, together with a chapter on remedies or methods that can be used in fighting injurious insects, insect enemies of the apple tree and its fruit, and the insect enemies of small grains. pp. 322. figs. 227. 8°. Lincoln, Nebr., The author, 1894.

**Cameron, Peter.** A monograph of the British phytophagous Hymenoptera. v. 4. Cynipidæ and appendix. pp. 248. pls. 19. 8°. London, Ray Society, 1893.

In this volume, besides a systematic treatment of the subject, the general questions of collecting and rearing, the theories of gall formation, the formation of galls and parasites are discussed.

**Canestrini, Giovanni.** Prospetto dell' acarofauna italiana (Prospectus of the Italian acarian fauna). pp. 835-915. pls. 16. 8°. Padua, Prosperini, 1897.

The Listroforidæ, the acaroids of the Formicæ (G. Leonardi), the Canestriniidæ, and the Psoroptidæ are treated.

**Comstock, Anna Botsford.** See **Comstock, John Henry** (below).

\* **Comstock, John Henry, and Comstock, Anna Botsford.** Manual for the study of insects. ed. 2. pp. 701. figs. 797. 8°. Ithaca, New York, Comstock Publishing Co., 1897.

An excellent manual, well provided with synoptical keys to the various groups, in which a successful attempt has been made to simplify the study of insects without at the same time sacrificing accuracy. The difficulty always encountered by the beginning student in mastering technical names is overcome to some extent by indicating their proper pronunciation by dividing them into syllables and marking the accented syllable. The figures are nearly all wood engravings, executed by Mrs. A. B. Comstock.

———. Insect life, an introduction to nature study. pp. 349. figs. 295. 12°. New York, D. Appleton & Co., 1897.

This excellent work for the beginning student or amateur gives general directions for collecting, preserving, and note taking; describes the different groups generally; is well supplied with keys; and brings out the habits and peculiarities of the insects noted. Roadside life, forest life, etc., the headings of chapters, indicate the manner in which the subject is treated. The reader is taken into the field, as it were, and his attention called to the various forms of insect life.

\* **Dalla Torre, Karl Wilhelm von.** Catalogus hymenopterorum hucusque descriptorum systematicus et synonymicus (A taxonomic and synonymic catalogue of the Hymenoptera thus far described). 8°. Leipsic, Wm. Engelmann, 1892-1898.

The following 8 volumes of this great catalogue have thus far appeared: I. Tenthredinidæ, including Nioceridæ, pp. 459, 1894. II. Cynipidæ, pp. 140, 1893. V. Chalcidæ, pp. 598, 1898. VI. Chrysididæ, pp. 118, 1892. VII. Formicidæ, pp. 289, 1893. VIII. Sphegidæ, pp. 749, 1897. IX. Vespidæ, pp. 181, 1894. X. Apidæ (Anthophila), pp. 643, 1896.

**Debray, F., and Maupas, E.** Le *Tylenchus devastatrix* (Kuhn) et la maladie vermiculaire des fèves en Algérie (*Tylenchus devastatrix* and the worm disease of beans in Algeria). pp. 55. 8°. Paris, Fontana & Cie., 1896.

**Erichson, Wilhelm Ferdinand, et al.** Naturgeschichte der Insecten Deutschlands (Natural history of the insects of Germany). v. 5. pp. 800. 8°. Berlin, R. Stricker, 1894-95.

A very extensive work, appearing in parts from time to time, which was begun by the author and continued by Georg Seidlitz and others. The three parts here noted form part of the fifth volume and treat of the Coleoptera.

\* **Frank, B.** Kampfbuch gegen die Schädlinge unserer Feldfrüchte (Book of repressive measures against the enemies of our field crops). pp. 308. pls. 20. figs. 46. Berlin, Parey, 1897.

This shows how to recognize the various animal and plant enemies of field crops, discusses their life histories, etc. The plates illustrate egg and larval states and the character of ravages. The text is divided into five parts and takes up specially injuries to beets, potatoes, leguminous plants, corn, and conifers.

\* **Green, E. Ernest.** Coccidæ of Ceylon. 4°. London, Dulan & Co., 1896.

This most excellent monograph is appearing in parts. Only 112 pages of text and 31 plates of the first part, dealing with the Conchaspinae and the Diaspinae, have appeared. The systematic account of the genera is preceded by a tabular summary of the subfamily characters, and this by an introduction treating anatomical details more or less fully.

\* **Griffini, Achille.** Il libro dei Coleotteri (The book of the Coleoptera). pp. 244. pls. 50. figs. 179. 4°. Milan, Ulrico Hoepli, 1896.

This is a work for the beginner. The 50 colored plates represent 1,300 species, and certainly must be of great assistance to the young collector. There is a sufficient number of keys for identification of specimens. The habitat and distribution of each species noted are given. An introduction gives the necessary information relative to collecting. The species noted are the principal ones of Italy and the more important related European forms.

\* **Gumpenberg, C. F. von.** Systema geometrarum zonæ temperationis septentrionalis. Systematische bearbeitung der spanner der Nordlichen gemässigten zone (A systematic work on the geometrical moths of the northern temperate zone). pp. 1118. pls. 8. f°. Halle, W. Engelmann, 1887-96.

Strictly a systematic work in Latin and German which appeared in 8 parts in *Abh. d. K. Leop.-Carol. Deutsch. Akad. d. Naturforscher*, vols. 49 to 65, and published by E. Blochmann & Son, of Dresden, and latterly by Dr. Guntz, in commission for Wm. Engelmann, of Leipsic.

\* **Judeich, J. Friedrich, and Nitsche, H.** Lehrbuch der Mitteleuropäischen Forstinsektenkunde (Text-book of the central European forest insects). 2 v. pp. 1+421. pls. 8. figs. 352. Vienna, E. Hölzel, 1895.

This is the eighth revised edition of Ratzeburg's "Die Waldverderber und ihre Feinde," and forms a complete treatise on the subject of forest insects and the means of combating them.

\* **Kappel, A. W., and Kirby, W. Egmont.** British and European butterflies and moths (Macrolepidoptera). pp. 273. pls. 30. figs. 8. 4°. London, Ernest Nester; New York, E. P. Dutton & Co., 1895.

The introduction gives directions for collecting, setting, rearing, etc. The body of the work is devoted to systematic descriptions; the lithographic plates are clear and of a high class of workmanship.

**Kirby, W. Egmont.** See **Kappel, A. W.** (above).

\* **Layens, Georges de, and Bonnier, Gaston.** Cours complet d'apiculture (culture des abeilles) (A complete course in apiculture). pp. 439. figs. 224. 12°. Paris, Paul Dupont, n. d.

A book for the French apiculturist.

\* **Lethierry, Lucien, and Severin, Guillaume.** Catalogue générale des hemiptères (General catalogue of Hemiptera). 3 v. pp. 838. 8°. v. I and II, Brussels, F. Hayez, 1893, 1894; v. III, Berlin, R. Friedländer & Sohn, 1896.

Volume 1 deals with the Pentatomidæ. Volume II, with Coreidæ, Berytidæ, Lygaridæ, and Parrhocoridæ. Volume III, with Tingidæ, Phymatidæ, Aradidæ, Hebridæ, Hydrometridæ, Henicocephalidæ, Reduvidæ, Saldidæ, Apophildæ, Cera-tocombidæ, Cimicidæ, and Anthocoridæ.

**Maupas, E.** See **Debray, F.**, p. 31.

\* **Melichar, Leopold.** Cicadinen (Hemiptera-homoptera von Mittel-Europa (The Cicadinae (Hemiptera-homoptera) of central Europe). pp. xxvii+364. pls. 12. 8°. Berlin, Felix L. Dames, 1896.

This is a purely systematic work. The introduction gives a survey of the anatomy of the group and of the bibliography.

\* **Miall, Louis Cornplou.** The natural history of aquatic insects. pp. 395. figs. 116. 12°. London, Macmillan & Co., 1895.

The introduction discusses water as a sphere of life, the invasion of water by

insects, the dominance of insects, degrees of adaptation to aquatic conditions, the surface film of water, wintering of aquatic insects, and cases of abridged life histories. The remainder of the book treats of aquatic Coleoptera, Hymenoptera, Hemiptera, Thysanura, and the groups commonly known as aquatic. A chapter is added on the insects of the seashore and one on the contrivances of aquatic insects.

**Nitsche, H.** See **Judeich, J. Friedrich**, p. 32.

\* **Reitter, Edmond**, *editor*. Bestimmungs-Tabelle der europäischen Coleopteren (Key to the European Coleoptera). Parts 26, 27, 30. 8°. Vienna and Brunn, 1894. For the specialist.

\* **Saunders, Edward**. Hymenoptera aculeata of the British Islands. pp. 391. pls. 52. 8°. London, L. Reeve & Co., 1896.

A systematic account of the families, genera, and species indigenous to Great Britain and Ireland, with notes on habits, distribution, etc.

\* **Schenkling, Sigm.** Nomenclator coleopterologicus; eine etymologische Erklärung sämtlicher Gattungs- und Artnamen der Käfer des deutschen Faunen-Gebietes (Coleopterological nomenclature; an entymological explanation of all the generic and specific names of the beetles of the German faunal region). pp. 224. 16°. Frankfurt a. M., H. Bechhold, 1894.

\* **Schmidt-Göbel, H. M.** Die schädlichen und nützlichen Insecten in Forst, Feld und Garten (The injurious and useful insects of the forest, field, and garden). pp. 348. atlas in ob. f°. of 14 col. pls. 8°. Vienna, A. Pichler's Witwe & Sohn, 1896.

The text is in two parts: Schädlichen Forstinsecten (Injurious forest insects) and Die nützlichen Insecten (The useful insects). It is a work for the economic entomologist, comprising descriptions of insects, their habits, and the remedies thought best to be employed against them.

**Scudder, Samuel Hubbard**. Guide to the genera and classification of the North American Orthoptera found north of Mexico. pp. 89. 8°. Cambridge, E. W. Wheeler, 1897.

This is a collection of keys arranged in systematic order.

\* **Sedgwick, Adam, Sinclair, F. G., and Sharp, David**. Peripatus, myriapods, and insects. pp. xi + 584. figs. 371. 8°. London and New York, Macmillan & Co., 1895.

A popular work, summarizing the facts regarding the morphology and toonomy of the groups treated. The figures are mostly new.

**Severin, Guillaume**. See **Lethierry, Lucien**, p. 32.

**Sharp, David**. See **Sedgwick, Adam** (above).

**Sinclair, F. G.** See **Sedgwick, Adam** (above).

**Smith, Frederick**. Catalogue of the British Hymenoptera in the collection of the British Museum. new ed. pp. 236. pls. 10. 8°. London, British Museum, 1891.

This is part 1, and deals with Andrenidae and Apidae.

\* **Somerville, William**. Farm and Garden Insects. pp. 127. figs. 46. 16°. London, Macmillan & Co., 1897.

This contains brief diagnostic descriptions and accounts of the life histories of the most common British insects, with suggestions as to remedial measures against them. A general account of the anatomy of insects and their enemies occupies 39 pages. The classification adopted is that by host plants.

**Thomson, Charles Gustav**. Opuscula entomologica (Entomological works). fasc. 16-18, 20-21. pp. 1659-2404. 8°. London, E. Malmström, 1892-96.

This is a continuation of a work begun in 1869 for entomologists strictly, completing the series to page 2404. In Latin, except quotations.

\* **Uzel, Jindrich**. Monographie Řádu "Thysanoptera." Monographie der Ordnung Thysanoptera (A monograph of the Thysanoptera). pp. 469. pls. 10. f°. 1162—No. 38—3



Na Kladem spisovatelov. V. Kommissie U. B. E. Tolmana V. Hradei Kralove. Königgrätz, The author, 1895.

One hundred and thirty-five species belonging to the group of Thysanoptera are treated systematically. An elaborate key in Hungarian and in German is given. In an appendix 25 species, insufficiently described, to be dealt with along with the 135 are noted. Following this is a section in which the group is considered paleontologically. Then follows in order an anatomical, an embryological, a biological, and an historical section, in which 191 papers are noted from 1691 (Bonanni) down to the present time. In the economical section the German résumé lists the food plants and notes the species affecting each. In the introduction the author's methods are detailed. German translations or summaries are given. The work is well indexed.

\* **Weed**, Clarence Moores. Life histories of American insects. pp. 272. pls. 21. figs. 94. 12°. New York, Macmillan & Co., 1897.

A popular work, with brief chapters on the more common insects and arachnids.

\* **Williston**, Samuel Wendell. Manual of the families and genera of North American Diptera. ed. 2, enl. pp. 167. 8°. New Haven, James T. Hathaway, 1896.

A work for the entomological student.

## FOODS AND FEEDING STUFFS.

**Beier**, C. Die Untersuchung unserer wichtigsten Nahrungs- und Genussmittel (Examination of the more important foods and condiments). pp. viii+147. 8°. Leipzig, 1898.

\* **Boizard**, E. Notions élémentaires sur les boissons fermentées, les alcools et les vinaigres (Elementary treatise on fermented drinks, alcohol, and vinegar). pp. 208 fig. 87. 8°. Poitiers, P. Oudin, 1895.

\* **Bonnejoy**. Principes d'alimentation rationnelle et de cuisine végétarienne (The principles of rational nutrition and vegetarian cookery). pp. 269. Paris, Berthier, n. d.

\* **Boutroux**, Léon. Le pain et la panification (Bread and bread making). pp. 358. figs. 57. Paris, J. B. Baillière et fils, 1897.

A handbook, containing chapters on flour, milling, bread making (French and foreign), fermentation, chemical composition of bread, adulteration, and nutritive value.

**Bower**, J. A. Simple methods for detecting food adulteration. pp. 118. figs. 36. cr. 8°. London, Society for the Promotion of Christian Knowledge, 1896.

**Brevans**, J. de. Les conserves alimentaires (Preserved foods). pp. viii + 396. figs. 72. 18°. Paris, J. B. Baillière et fils, 1896.

\* **Camerer**, Wilhelm. Der Stoffwechsel des Kindes von der Geburt bis zur Beendigung des Wachstums (The metabolism of the child from birth until the completion of growth). ed. 2, enl. pp. 160. 8°. Tübingen, H. Laupp, 1896.

This contains the author's experiments, extending over a number of years, and the deductions drawn from them.

\* **Cathelineau**, H., and **Lebrasseur**, A. Des aliments, hygiène, et régimes alimentaires (Foods, hygiene, and dietary standards). pp. vi+274. col. pls. 31. 8°. Paris, Rncl & Co., 1897.

In addition to general discussion, this volume contains tables of analyses of a number of foods with dietaries suited to persons of different ages and occupations in health and disease.

**Depaire**, J. B. Hydromel et produits dérivés de la fermentation de miel (Hydromel and the fermentation products of honey). pp. 71. Brussels, M. Lamertin, 1896.

**Drechsler**. Auswahl, Einkauf und Beurtheilung unserer Fleischkost, nebst allen die Tierreiche entstammenden Lebensmitteln (Selection, purchase, and valuation of meat and meat products). pp. iv+104. pls. 3 (1 col.). 8°. Munich, J. Lindaner, 1896.



\* **Earle, Mande.** Sick-room cookery and hospital diet. pp. iv+252. fig. 1. 16°. London, Spottiswoode & Co., 1897.

In addition to recipes for preparing food for the sick, for convalescents, and diabetic patients, several chapters are devoted to the classification of food, food values, effect of cooking, and similar topics. A special chapter, "Notes on the feeding of infants," is contributed by Frank C. Madden.

**Elliott, S. Maria.** See **Richards**, Ellen H., p. 36.

\* **Ephraim, Julius, editor.** Sammlung der Originalarbeiten über Analyse der Nahrungsmittel (Original investigations on food analysis). pp. viii+322. 12°. Leipzig, J. A. Barth, 1895.

This is Volume IV of *Bibliothek für Nahrungsmittel-Chemiker*.

**Gillet, H.** Formulaire des régimes alimentaires (Dietary standards). Paris, J. B. Baillière et fils, 1897.

A treatise on diet in health and disease.

**Grandeau, Louis.** Alimentation de l'homme et des animaux domestique (The nutrition of man and the domestic animals). v. 2. Paris, Firmin-Didot & Cie., 1895.

**Hebrant, G.** See **Mosselman, G.**, p. 36.

\* **Heckel, Édouard.** Les kolas africains (The African kola nut). pp. 406. pls. 3 (1 col.). figs. 46. 8°. Paris, Société d'Éditions Scientifiques, 1893.

This treats of the botany and chemistry of the kola nut, its pharmaceutical preparation, and use in therapeutics. Experiments in which it was used as a food or stimulant in cases of fatigue or extreme muscular work are summarized.

\* **Hoy, Albert Harris.** Eating and drinking. pp. 304. Chicago, A. C. McClurg & Co., 1896.

The book contains the author's views on nutrition. They do not agree in many points with those commonly accepted.

**Jardin, E.** Le caféier et le café (Coffee plantations and coffee). Paris, Leroux, 1895.

**Kjennerud, J.** Brodt (Bread). Christiania, Haffner & Hill, 1895.

A very complete monograph on the subject, with chapters on cereals, flour, baking of bread, and hygiene of baking.

**Kjerrulf, G.** Handbok i Köttbesigtning (Handbook of meat inspection). figs. 48. pls. 4. Stockholm, 1896.

\* **Klöpper, Die Ernährung des Menschen und ihr Einfluss auf Arbeitskraft und Gesundheit** (The food of man and its influence on health and strength). pp. 27. 8°. Cassel, E. Hühn, 1895.

**Kobert, Rudolf.** Ueber Kvass und dessen Bereitung (Concerning kvass and its manufacture). pp. 32. Halle, Tauche & Grosse, 1897.

Kvass is a fermented beverage made from ground grains or foods prepared from them, sometimes with the addition of sugar and flavoring materials.

\* **König, J.** Procentische Zusammensetzung und Nährgehalt der menschlichen Nahrungsmittel (Composition and value of foods). ed. 7. pp. 4. chart I. Berlin, J. Springer, 1897.

A colored chart accompanied by descriptive text showing the composition and digestibility of important foods, the nutrients in dietary standards, and the comparative value of foods from a pecuniary standpoint.

**Lebensmittelbuch** (Book of foods and condiments). pp. vii+152. Bern, F. Schöninger, 1897.

A popular work, prepared under the auspices of the *Verein schweizerischer analytischer Chemiker*, describing the more important foods, condiments, etc., and their adulteration, with simple methods for examination.

**Lebrasseur, A.** See **Cathelineau, H.**, p. 34.

**Lebbin.** See **Plagge**, p. 36.

**Mansfeld, M.** Die Untersuchung der Nahrungs- und Genussmittel, sowie einiger Gebrauchsgegenstände (Analyses of foods, condiments, and some commercial products). pp. 168. figs. 24. 8°. Vienna and Leipsic, F. Denticke, 1896. A laboratory manual and text-book.

**Mayrhofer, J.** Instrumente und Apparate zur Nahrungsmittel-Untersuchung (Instruments and apparatus for food analysis). pp. xii + 324. figs. 158. Leipsic, J. A. Barth, 1894.

This is Volume III of *Bibliothek für Nahrungsmittel-Chemiker*.

**Mosselman, G., and Hebrant, G.** Guide de consommateur la viande et les produits que s'y rattachent dans l'alimentation de l'homme (Guide to the purchase of meat and meat products used for human food). Brussels, M. Lamertin, 1896.

\* **Plagge and Lebbin.** Untersuchungen über das Soldatenbrot (Investigations on bread for soldiers). pp. viii + 234. pls. 12. 8°. Berlin, A. Hirschwald, 1897.

This volume, which is No. 12 of *Veröffentlichen aus dem Gebiete des Militär-Sanitätswesens*, contains an investigation of different methods of grinding grain, suggestions for improving bread for soldiers, experiments on milling, digestion experiments with different kinds of bread, a review of earlier investigations on bread, and a bibliography. In an appendix a large number of digestion experiments with "Alenronat biscuits" and other similar products are reported.

\* **Prior, Eugen.** Chemie und Physiologie des Malzes und des Bieres (Chemistry and physiology of malt and beer). pp. x + 597. figs. 15. tabs. 7. Leipsic, J. A. Barth, 1896.

This volume, which is No. 5 of *Bibliothek für Nahrungsmittel-Chemiker*, discusses the chemical and physical processes of preparation and manufacture of malt and beer. The volume is designed for a text book for technological and food chemists, and furnishes a bibliography of the subject.

**Richards, Ellen H., and Elliott, S. Maria.** The chemistry of cooking and cleaning. ed. 2. pp. 160. Home Science Publishing Co., 1898.

This useful book has been revised and rewritten.

**Riviers, C.** Études sur les végétaux alimentaires en Algérie (Studies on Algerian edible plants). pp. 56. 8°. Algiers.

This includes exotic and European fruits, tubers, vegetables, forage plants, etc.

\* **Röttger, H.** Kurzes Lehrbuch der Nahrungsmittel-Chemie (A short text-book of food chemistry). pp. xii + 467. Leipsic, J. A. Barth, 1894.

This is Volume II of *Bibliothek für Nahrungsmittel-Chemiker*.

\* **Spencer, Edward.** Cakes and ale. pp. xii + 282. London, Grant Richards, 1897.

Many foods and drinks are described and recipes for cooking given.

**Strauch, R.** Das Hühnerei als Nahrungsmittel und das Conserviren der Eier (Hens' eggs as food and the preservation of eggs). pp. 51. Bremen, M. Heinsius, 1896.

**Wenger, G.** Chemie und Technik im Fleischergewerbe (The chemistry and technique of the meat industry). pp. viii + 152. figs. 38. 8°. Wien, 1898.

\* **Woll, Fritz Wilhelm.** Book on silage. pp. 190. figs. 24. 12°. Chicago, 1895.

This volume contains chapters on silage crops, silos, silage, feeding of silage, comparison of silage and other feeds, and the silo in modern agriculture.

\* **Würzburg, Arthur.** Die Nahrungsmittel Gesetzgebung im deutschen Reiche und in den einzelnen Bundesstaaten (Laws relating to foods in the German Empire and in its federated states). pp. xiv + 372. Leipsic, J. A. Barth, 1894.

This is Volume I of *Bibliothek für Nahrungsmittel-Chemiker*.

\* **Yeo, Isaac Burney.** Food in health and disease. pp. viii + 592. figs. 4. London, Paris, and Melbourne, Cassel & Co., Ltd., 1896.

A new and revised edition. The different classes of nutrients, the functions of foods, etc., are discussed.

## ANIMAL PRODUCTION.

## GENERAL.

\* **Henry**, William Arnon. Feeds and feeding. pp. iv + 657. 8°. Madison, The author, 1898.

This is a comprehensive manual, suited for students and practical feeders. It is divided into three main sections: (1) Plant growth and animal nutrition; (2) feeding stuffs; and (3) feeding farm animals.

Under the first section, the growth of the plant and its suitability for animal food and the digestion and assimilation of food by animals are discussed; also the laws of animal nutrition, the sources of energy in the animal body, the influence of food on the composition of the body, and similar topics. The methods of calculating rations are included. The suggested feeding standards for different animals under different conditions are discussed.

Under the second main division, the different cereals, oil-bearing and leguminous seeds, the by-products made from them, forage plants, roots, and miscellaneous feeding stuffs are described and discussed; the manurial value of the different feeding stuffs is treated of at length; soiling and ensiling are also described.

In the third main division, feeding the different farm animals for growth or the production of force is treated of in detail, as well as the feeding of dairy cows for the production of milk. Special attention is also given to the feeding of sheep for wool.

**Gobbels-Copette**. Nos animaux domestiques dans leur Rapports avec les Elements naturels (Our domestic animals in their relation to nature). pp. xxiv + 355. 8°. Brussels, 1897.

This is a treatise on meteorology and climatology as applied to zootechny and animal hygiene.

**Kohlwey**, Heinrich. Arten- und Rassen-bildung (Breeding types and races). pp. vii + 72. figs. 5. 8°. Leipzig, W. Engelmann, 1897.

An introductory treatise on animal production, with a preface by G. H. Th. Eimer.

\* **Watson**, John, *et al.* The best breeds of British stock. pp. vii + 130. 8°. London, W. Thacker & Co.; Calcutta, Thacker, Spink & Co., 1898.

This volume, intended for farmers and stock raisers in England and the colonies, contains articles on dairy cows, cattle, horses, sheep, and pigs. Different breeds are treated of, as well as breeding and management. The articles are contributed by Prof. Sheldon, Gilbert Murray, Prof. Malden, Alexander MacDonald, James Long, Thomas Dykes, C. MacPherson-Grand, and John Watson, who also edits the volume.

## CATTLE RAISING.

\* **Housman**, William. Cattle, breeds and management. pp. 270. pls. 34. 8°. London, Vinton & Co., 1897. (Live stock handbooks No. 4.)

A popular treatise, with a chapter on diseases of cattle by J. W. Axe.

\* **Pusch**, G. Die Beurteilungslehre des Rindes (The judging of cattle). pp. viii + 388. figs. 327. 8°. Berlin, Paul Parey, 1896.

**Steuert**, L. Die Rinderhaltung (Cattle raising). pp. 799. col. pls. 24. figs. 728. 8°. Berlin, Paul Parey, 1895.

A practical handbook.

## SHEEP AND GOAT HUSBANDRY.

**Hoffman**, L. Das Buch von der Ziege (The goat book). pp. —. pls. 4. figs. 8. Stuttgart, E. Ulmer, 1897.

Contains chapters on breeds, care, feeding, etc.

\* **Kloepfer**, E. Die Ernährung und Haltung der Ziege als Milchtier des kleinen Mannes (The feeding and management of goats). ed. 2. pp. 62. Essen, G. D. Baedeker, 1896.

A popular treatise.

**Wilsdorf, G.** Die schweizer Saanenziege (The Swiss milch goat). pp. 6+82. figs. 2. 8°. Berlin, 1896.

The book describes the breeding and care of Swiss milch goats and discusses them in relation to German goats.

\* **Wrightson, John.** Sheep, breeds and management. ed. 2. pp. 235. pls. 23. London, Vinton & Co., Ltd., 1895. (Live stock handbooks No. 1.)

Contains chapters on different breeds, management of sheep and lambs, feeding for different purposes, diseases of sheep, and similar topics.

#### SWINE HUSBANDRY.

\* **Spencer, Sanders.** Pigs, breeds and management. pp. 180. pls. 19. London, Vinton & Co., Ltd., 1897. (Live stock handbooks No. 5.)

Chapters on different breeds, breeding, management, experimental feeding, etc., diseases of pigs (by J. Wortley Axe), and on bacon and ham curing (by L. M. Douglas).

#### HORSE HUSBANDRY.

**Alekan, A.** See **Grandeau, Louis** (below).

**Ballacey, H.** See **Grandeau, Louis** (below).

\* **Biddell, Herman, et al.** Heavy horses, breeds and management. ed. 2. pp. 219. pls. 29. London, Vinton & Co., Ltd., 1896. (Live stock handbooks No. 3.)

Contains chapters on different kinds of heavy horses, their management and the diseases and injuries to which they are liable.

\* **Blew, William Charles Arlington, et al.** Light horses, breeds and management. ed. 2. pp. 226. figs. 38. London, Vinton & Co., Ltd., 1894. (Live stock handbooks No. 2.)

Contains chapters on different breeds of horses, on asses and mules, the management of light horses, and on the diseases and injuries to which they are subject.

**Dubenski, D.** Istoricheskiĭ ocherk Razvitiya Russkagho ghosudarstvennagho i chastnagho kunnozavodstva ot Moskovskoi Rusi i do Nashikh dnei (History of horse breeding by the Russian Government and private individuals). St. Petersburg, Devriyen, 1896.

———. *Konskie poroditavunnī i zavodui kavkaza* (Horses and horse breeding in Caucasus). St. Petersburg, Devriyen, 1896.

———. *Konskie zavodui Evropeiskoi Rossii, Kavkaza i Turghaiskoi oblasti* (Horse breeding in Europe, Russia, Caucasus, and the Province Turgaj). St. Petersburg, Devriyen, 1896.

**Firsov, V. E.** See **Merder, I. K.**, p. 39.

**Grandeau, Louis, Ballacey, H., and Alekan, A.** Études expérimentales sur l'alimentation du cheval de traite (Experimental studies on the feeding of draft horses). v. 7. pp. 158. 8°. Nancy, Berger-Levrault et Cie., 1897.

This is the seventh of a series of reports to the *Compagnie générale des voitures*. A large number of experiments on feeding horses are reported and deductions are drawn from these and from previous work.

**Haffner, W. von.** Practical help in horse breeding. Stockholm, 1896.

**Hoffmann, L.** Wandtafeln über die Rassen, Gangarten und Farben des Pferdes (Charts showing the breeds, gaits, and colors of horses). 2 col. charts 60 by 70 cm., with a descriptive text. 8°. pp. 4 + 89. Stuttgart, E. Ulmer, 1897.

**Kalning, K. I.** Uchenie o Ratzionalnoi Kovkye Loshadei (Rational horse shoeing). pp. 121. Kazan, 1896.



**Mégnin**, Paul. *Le cheval et ses races* (The horse and his ancestry). pp. 487. figs. 74. 8°. Vincennes, L'Eleveur, 1895.

**Merder**, I. K., and **Firsov**, V. E. *Russkaya Loshad v Drevnosti i Teper* (Horse breeding in ancient and modern times). St. Petersburg, Devriyen, 1896.

This is a detailed report of an investigation of Russian horse breeding from the earliest times to the present day.

**Nunn**, J. A. *Stable management in India and the colonies*. ed. 2. pp. —. London, W. Thacker & Co.; Calcutta, Thacker, Spink & Co., 1897.

This volume, based on the author's personal observation, contains information on the food, water, and care of horses in hot climates, the ventilation of stables, and similar topics.

**Rueff**, A. von. *Wandtafeln zur Beurteilung des Aeusseren des Pferdes und seine Fehler* (Charts for judging horses on the basis of external conformation). 2 col. charts 51 by 71 cm., with text. Stuttgart, E. Ulmer, 1897.

The good and bad points are shown and explained.

#### AVICULTURE.

\* **Boyer**, Michael K. *A living from poultry*. pp. 40. 16°. Boston, I. S. Johnson & Co., 1896. (Farm poultry series No. 3.)

A number of chapters on poultry raising for profit, containing considerable information.

\* ———. *Money in hens*. pp. 53. ill. 24°. Syracuse, Clarence C. DePuy, 1895. A popular treatise on the subject.

\* **Friderich**, C. G. *Geflügelbuch; Naturgeschichte, Zucht und Pflege sämtlicher Hühner- und Taubenrassen, sowie der ubrigen Hansvogel* (Poultry book; natural history, breeding, and care of various breeds of fowls, doves, and other domestic birds). ed. 4, enl. pp. 404. col. pls. 24. figs. 216. 8°. Stuttgart, Julius Hoffmann, 1896.

**Grunhaldt**, O. *Die industrielle Geflügelzucht in Gross- und Kleinbetrieb* (The poultry industry on a large and small scale). ed. 4. figs. 31. Dresden, G. Schönfeldt, 1896.

A new and revised edition of *Künstlichen Geflügelzucht*.

\* **Lasseron**, J. V. *Nouveau traité d'aviculture pratique* (New treatise on practical aviculture). pp. 260. ill. 8°. Paris, Société d'Éditions Scientifiques, 1898.

This is volume XI of *Encyclopédie des connaissances pratiques*. It is a popular handbook describing the different breeds of chickens and other poultry. The diseases of poultry are also discussed. There is a chapter on rabbits.

\* **Myrick**, Herbert, *editor*. *Turkeys, and how to grow them*. pp. 159. figs. 35. 12°. New York, Orange Judd Co., 1897.

A popular treatise, compiled from a variety of sources, on turkeys and turkey raising.

#### FISH CULTURE.

**Baudouin**, Marcel. *La pisciculture marine* (Marine pisciculture). pp. 52. figs. 29. 8°. Paris, Institut International de bibliographie scientifique, 1897.

**Bettoni**, E. *Piscicoltura d'acqua dolce* (Fresh water pisciculture). pp. 226. figs. 85. 12°. Milan, 1894.

**Blanchon**, H. L. Alph. *Manuel pratique du pisciculture* (Manual of practical pisciculture). pp. 324. figs. 65. 18°. Paris, Mulo, 1897.

**Borne-Berneuchen**, Max von dem. *Kurze Anleitung zur Fischzucht in Teichen* (Introduction to fish culture in ponds). ed. 3, rev. and enl. by Hans von Debschitz. pp. 63. ill. 8°. Neudamm, J. Neumann, 1897.

**Brocchi, P.** La pisciculture dans les eaux douces (Fresh water pisciculture). pp. 330. ill. 8°. Paris, Librairies-Imprimeries Réunies, 1896.

**Jaffier, J.** Elements de pisciculture pratique (Elements of practical pisciculture) pp. xii + 122. figs. 50. 8°. Paris, Colin & Cie., 1897.

**Nicklas, Carl.** Lehrbuch der Teichwirtschaft (Handbook of pond management). ed. 2. pp. 14 + 508. ill. large 8°. Stettin, Herrcke & Lebeling, 1898.  
An enlarged and improved edition.

**Roché, Georges.** La culture des mers en Europe—pisciculture, pisciculture, ostreiculture (The culture of the sea in Europe; fish raising, fish and oyster culture). pp. 332. figs. 81. Paris, F. Alcan, 1897.

## DAIRYING.

**Allard, D.** Le beurre et les fromages (Butter and cheese). pp. 132. 8°. Paris, Deyrolle, 1896.

The subjects treated of are milk production, skimming and handling cream, butter making, and the different sorts of cheese.

\* **Farrington, Edward Holyoke, and Woll, Fritz Wilhelm.** Testing milk and its products. pp. 236. pl. 1. figs. 45. Madison, Wis., Mendota Book Co., 1897.

This little book treats not only of the testing of milk, but also of the application of the results on the farm and at the creamery and cheese factory. It is intended as a manual for dairy students, creamery and cheese factory operators, and dairy farmers.

\* **Hont, Fred. de, editor.** Handboek voor de landbouwer; volledige verzameling van de leergangen der Melkerij School van het Kloosterhof te Wevelghem (Handbook for the agriculturist; complete compilation of the course of instruction of the dairy school of the Monastery at Wevelghem). pp. 837. ill. 8°. Kortrijk, Jules Vermant, 1893.

**Martiny, Benno.** Milchwirtschaftliches Taschenbuech für 1898 (Dairy notebook for 1898. Bremen, M. Heinsius Nachfolger, 1898. .

This is a combined diary and handbook of useful information for dairymen, which has been issued annually for more than twenty years. It contains a large number of useful facts, tables, formulas, etc. The edition for 1898 contains several additions.

\* **Pagès, Calixte.** Hygiène des animaux domestiques dans la production du lait (The hygiene of domestic animals in the production of milk). pp. 15 + 324. 12°. Paris, G. Masson, 1896.

**Rigaux, E.** Monographie de la fabrication des fromages à pâte molle (Monograph on the manufacture of soft cheese). pp. 56. ill. 8°. Mende, 1896.

\* **Snyder, Harry.** The chemistry of dairying. pp. viii + 156. pls. 2. figs. 21. Easton, Pa., Chemical Publishing Co., 1897.

This is an elementary text-book, intended to furnish useful information to a class of young men who intend to become farmers and dairymen, rather than scientific experts.

**Stillich, Oskar.** Die Arbeit der Kühe (Cows as draft animals). pp. 62. pls. 2. 8°. Leipsic, H. Voigt, 1897.

Investigations on the influence of muscular work upon the production and composition of milk, and practical deductions concerning the cow as a draft animal.

\* **Wing, Henry Hiram.** Milk and its products. pp. 230. figs. 33. New York, Macmillan & Co., 1897.

This is a treatise upon the nature and qualities of dairy milk and the manufacture of butter and cheese, designed to give to the dairyman and particularly to the dairy student in simple, concise form, the principles underlying modern dairy practice.

**Woll, Fritz Wilhelm.** See **Farrington, Edward Holyoke** (above).

## VETERINARY SCIENCE AND PRACTICE.

\* **Cagny, Paul.** Formulaire des vétérinaires praticiens (Formulas for veterinary practitioners). pp. 332. 18°. Paris, J. B. Baillière et fils, 1897.

A work containing about 1,500 formulas, edited in accordance with recent therapeutic methods

**Dinwiddie, R. R.** Manual of veterinary microbiology. pp. 342. figs. 19. 12°. New York, W. R. Jenkins, 1894.

A brief text-book for the beginner, treating of microbes in the static condition, the physiology of microbes, pathogenic microbes in the static condition, physiology of microbes, transformation and destruction of pathogenic microbes in their relation to hygiene and therapeutics, and methods of determination of pathogenic microbes and of microbe diseases.

\* **Frohner, Eugen.** Lehrbuch der Toxikologie für Thierärzte (Text-book of toxicology for veterinarians). pp. 256. 8°. Stuttgart, Ferdinand Enke, 1890.

\* **Galtier, V.** Traité des maladies contagieuses et de la police sanitaire des animaux domestiques (Treatise on contagious diseases and on veterinary control of domestic animals). ed. 3. pp. 1,283. 8°. Paris, Asselin et Houzeau, 1897.

A comprehensive work on contagious diseases, treating their etiology, pathology, lesions, incubation, symptoms, evolution, and their prophylaxy by hygienic methods and by governmental veterinary control. The work is divided into two parts. In the first part the general subjects just noted are treated; in the second the various contagious diseases are considered specifically.

\* **Gautier, Armand.** Les toxines microbiennes et animales (The microbic and animal toxins). pp. 617. 8°. Paris, Société d'Éditions Scientifique, 1896.

For the specialist.

\* **Macé, E.** Atlas de microbiologie (A bacteriological atlas). pls. 60, with expl. text. 8°. Paris, J. B. Baillière et fils, 1897.

This atlas, which figures the principal types of bacteria, is issued in parts of 20 plates each, the first of which is ready for issue. This contains colored illustrations of *Bacillus tuberculosis*, *Bacillus anthracis*, bacillus of diphtheria, *Staphylococcus*, *Streptococcus*, bacillus of typhoid fever, coli bacillus, *Pneumococcus*, *Pneumobacillus*, *Vibrio*, bacillus of tetanus, bacillus of symptomatic anthrax, *Bacillus pyocyaneus*, and *Gonococcus*.

\* **Moniez, Romain.** Traité de parasitologie animale et végétale (Treatise on animal and vegetable parasitology). pp. 680. figs. 100. 8°. Paris, J. B. Baillière et fils, 1896.

\* **Muir, Robert, and Ritchie, James.** Manual of bacteriology. pp. 519. figs. 108. 12°. Edinburgh and London, Young & Pentland, 1897.

A brief and comprehensive text-book. In the systematic description of the various bacteria an attempt is made to bring into prominence the evidence of their etiological relationship to the corresponding diseases and to point out the general laws governing their action as the producers of disease.

\* **Neumann, L. G.** A treatise on the parasites and parasitic diseases of the domesticated animals. Trans. by George Flemming. pp. 800. figs. 365. 8°. London, Baillière, Tindall & Cox; New York, William R. Jenkins, 1892.

A comprehensive work for the veterinarian.

**Ritchie, James.** See **Muir, Robert** (above).

\* **Stossich, Michele.** Il genere *Ascaris* Linne; lavoro monografico (The genus *Ascaris*, Linne; a monographic work. pp. 114. 8°. Trieste, Lloyd Austriaco, 1896.

A thorough description from the standpoint of the taxonomist is given, together with the synonymy of the species. There are 218 species treated.

\* **Theobald, Frederick Vincent.** The parasitic diseases of poultry. pp. 120. figs. 23. 12°. London, Gurney & Jackson, 1896.

A brief manual for the poultry keeper, describing the common vegetable and animal parasites of poultry, together with symptoms produced by and the remedies to be used against them.

\* **Voges, O.** Der Kampf gegen die Tuberkulose des Rindviehs. (The struggle against bovine tuberculosis). pp. 82. 8°. Jena, Gustav Fischer, 1897.

A lengthy popular essay setting forth the difficulties encountered and discussing the various questions connected with the subject and advocating an enforcement for a period of five years in the German Empire of measures similar to those employed in Denmark.

\* **Wasielewsky, von.** Sporozoenkunde. Ein Leitfaden für Aerzte Tierärzte und Zoologen (Treatise on sporozoa. A guide for physicians, veterinarians, and zoologists). pp. viii+162. figs. 111. 8°. Jena, Gustav Fischer, 1896.

Besides descriptions, etc., of the various parasites, there is given a thorough consideration of the pathological changes caused by them. The five orders, Gregarina, Haemosporidia, Coccidia, Acystosporidia, and Myxosporidia are recognized.

\* **Williams, William.** Principles and practice of veterinary medicine. ed. 8. pp. 863. pls. 13. figs. 50. 8°. Edinburgh, John Menzies & Co.; London, Baillière Tindall & Cox, 1897.

The bacteriological portions of this work have been entirely recast.

\* **Wurtz, Robert Theodore.** Précis de bactériologie clinique (A summary of clinical bacteriology). pp. 544. figs. 57. 16°. Paris, Masson & Cie., 1897.

This is a laboratory compendium for the worker in clinical bacteriology. A description is given of material and of local manifestations of infectious diseases, their bacteriology, and the bacteriology in general of microbic diseases discussed.

## TECHNOLOGY.

**Andés, Louis Edgar.** Animalische Fette und Oele, ihre praktische Darstellung, Reinigung, Verwendung zu den verschiedensten Zwecken, ihre Verfälschung und Untersuchung (Animal fats and oils, their practical preparation, purification, and use, their adulteration and analysis). pp. viii+256. figs. 62. 8°. Vienna, A. Hartleben, 1897.

This is volume 228 of the *Chemisch-technische Bibliothek* and is a handbook designed for the use of manufacturers of fats, oils, soap, and candles; for agriculturists, tanners, etc.

\* **Champville, G. Fabius de.** Comment s'obtient le bon cidre (How to make good cider). pp. viii+304. figs. 63. 8°. Paris, Société d'Éditions Scientifiques, 1896.

\* **Dureau, B.** L'industrie du sucre depuis 1860 (1860-90) (The sugar industry since 1860 (1860-90)). pp. 263. 4°. Paris, 1894.

\* **Layens, Georges de.** L'hydromel (Hydromel). pp. 20. pl. 1. 16°. Paris, Paul Dupont, 1894.

A pamphlet discussing the advantage of turning honey into hydromel, the method employed, and other related questions.

**Leyxeira, Giuseppe.** Grassi animali, vegetalé minerali (Animal, vegetable, and mineral fats). pp. 112. 16°. Perugia, 1897.

\* **Petit, P.** La bière et l'industrie de la brasserie (Beer and the brewing industry). pp. 420. 12°. Paris, 1896.

This is a volume of *Encyclopédie de chimie industrielle*.

\* **Poole, Herman.** The calorific power of fuels. pp. xv+155. figs. 40. 8°. New York, John Wiley & Sons, 1898.

This volume is based on Scheurer-Kestner's calorific power of fuels, and contains, in addition to other matter, tables of heats of combustion of fuels, solid, liquid, and



gaseous. The book is of special interest to station workers, since it contains descriptions of various forms of calorimeters.

**Saare, O.** Die Fabrikation der Kartoffelstärke (The manufacture of potato starch). pp. xii+577. ill. 8°. Berlin, J. Springer, 1897.

**Sidersky, D.** Aide-mémoire de sucrerie (Handbook of sugar making). pp. viii+70. 8°. Utrecht, 1897.

\* **Spencer, Guilford Lawson.** Handbook for chemists of beet-sugar houses and seed-culture farms. ed. 1. pp. 2999. ill. 16°. New York, John Wiley & Sons; London, Chapman & Hall, 1897.

Contains selected methods of analysis and of sugar-house control, reference tables, etc.

\* ———. Handbook for sugar manufacturers. ed. 3, rev. and enl. pp. 43. figs. 10. 12°. New York, John Wiley & Sons; London, Chapman & Hall, Ltd., 1897.

A revised and enlarged edition of this useful handbook, which contains practical instructions in sugar-house control, the diffusion process, selected methods of analysis, reference tables, etc.

**Stein, Sigmund.** Sugars, home-grown and home-manufactured. pp. 71. ill. with 19 eng. Liverpool, C. Finling & Co., 1898.

Advocates beet-sugar industry for Great Britain.

**Truchot, P.** L'ammoniaque, ses nouveaux procédés de fabrication (Ammonia, new methods of preparation). pp. 367. 16°. Paris, Tignol, 1897.

\* **Wortmann, Julius.** Anwendung und Wirkung reiner Hefen in der Weinbereitung (The employment and action of pure yeasts in wine making). pp. 62. figs. 12. Berlin, Paul Parey, 1895.

## AGRICULTURAL ENGINEERING.

**Anleitung zur Drainage** (Introduction to drainage). pp. 142. ill. 8°. Frauenfeld, J. Hubers, 1897.

\* **Baker, M. N.** Sewerage and sewage purification. pp. vi+144. sm. 12°. New York, D. Van Nostrand Co., 1896.

A brief practical treatise, forming one of the Van Nostrand Science Series. It is in a sense a substitute for Corfield's "Sewerage and Sewage Utilization," published in 1875. The chapter on sewage farming makes this book of interest agriculturally.

———. See **Rafter**, George W., p. 44.

\* **Brough, Charles Hillman.** Irrigation in Utah. pp. xv+212. pls. 5. 8°. Baltimore, The Johns Hopkins Press, 1898.

The book is divided into two parts: (1) Economic history of irrigation in Utah, including the formation of the cooperative system (1847-48), economic development under the cooperative system (1848-62), early legislation, transportation and commerce as aids to irrigation (1867-77), recent legislation (1877-97), capitalistic irrigation (1890——), development of agriculture through irrigation, development of horticulture through irrigation, and relation of irrigation to other factors of Utah's industrial system; (2) problems of irrigation in Utah, including advantages of reclaiming remaining irrigable land, methods of reclaiming the whole body of irrigable land, administration of irrigable land already ceded to the State, State control of water, necessity for more accurate means of measuring water, and marketing of irrigation products. Miscellaneous information and data are given in an appendix. One of the most notable of recent contributions to the subject of irrigation in the United States.

\* **Debauve, A.** Distributions d'eau égouts (The disposal of sewage). v. 1, pp. 711, figs. 216; v. 2, pp. 606, figs. 57, pls. 43. text 8°. pls. f°. Paris, P. Vichy-Dunod et Cie., 1897.

This is an elaborate treatise on this subject adapted principally to the uses of the sanitary engineer, especially the French sanitary engineer.

**Fontaine, L.** *Nouveau traité de mécanique agricole* (A new treatise on agricultural mechanics). pp. 172. figs. 14. Montpellier, C. Conlet, 1896.

\* **Kiersted, Wynkoop.** A discussion of the prevailing theories and practices relating to sewage disposal. pp. xiv + 182. 12°. New York, John Wiley & Sons, 1894.

A treatise adapted to the general reader, discussing sewage and sewerage; vital processes of purification; disposal by dilution, by irrigation, and by intermittent filtration; and purification by chemical precipitation. Land disposal of sewage involves both irrigation and intermittent filtration, and is not considered generally practicable.

\* **Malden, Walter J.** *Farm buildings and economical agricultural appliances.* pp. 192. figs. 18. London, Kegan Paul, Trench, Trübner & Co., Ltd., 1896.

Includes chapters on general considerations on farm buildings, homesteads adapted to varying conditions; covered yards and temporary buildings—conversion of existing buildings to suit changes; farm cottages and water; machinery for farm buildings—power; and machinery for special purposes. This well written book is designed especially for the British farmer, but many of its suggestions are of wider interest and application.

\* **Rafter, George W., and Baker, M. N.** *Sewage disposal in the United States.* ed. 2. pp. xxvii + 598. pls. 7. figs. 116. 8°. New York, D. Van Nostrand Co.; London, Sampson, Low, Morston & Co., Ltd., 1894.

An exhaustive treatise on this subject from the American standpoint, adapted especially to the use of "sanitary authorities, engineers, and others interested in questions of public sanitation." The work is divided into two parts. Part I discusses the "governing principles of sewage disposal with special reference to American needs." Part II "gives the salient features of the principal American sewage-disposal works with, so far as they can be obtained, reliable statements of cost of construction and operation."

The chapters on water-borne infectious diseases of animals, on broad irrigation, and the use of the silo in sewage farming, and on the plants on which sewage farming is practiced are of especial interest to the agriculturist.

**Ringelmann, Maximilien.** *Traité des machines agricoles. Machines et ateliers de préparation des aliments du bétail* (Treatise on agricultural machines. Machines and mills for preparing foods for animals). pp. viii + 124. figs. 120. large 8°. Paris, [1897].

Treats of oil-cake mills, apparatus for cooking foods and heating water, root crushers, and mills for the mechanical preparation of feeding stuffs.

**Schubert, F.** *Entwürfe zumeist ausgeführter landwirtschaftlicher Gebäude aller Art* (Plans for farm buildings of all kinds). pls. 56, with text. pp. —. Stuttgart, E. Ulmer, 189-.

In nearly every case the plans are from buildings already constructed.

\* **Vermorel, V.** *Aide-mémoire de l'ingénieur agricole* (Ready reference book for the agricultural engineer). pp. 1000. figs. 140. Paris, Librairie Polytechnique, Baudry & Cie., 1897.

A very handy and complete collection of useful tables, formulas, methods, etc., relating to mathematics, mechanics, physics, agricultural chemistry, geology, botany, zoology, meteorology, agriculture, viticulture, arboriculture, parasites and diseases of cultivated plants, agricultural technology, agricultural engineering, zootechny, rural law, and miscellaneous topics. The book contains a classified list of the principal works consulted in its preparation and an alphabetical index.

## MISCELLANEOUS.

\* **Beaureddon, L'abbé.** *Voyage agricole chez les anciens on l'économie rurale dans l'antiquité* (Agricultural excursions among the ancients, or rural economy in antiquity). pp. 380. 8°. Paris, Arthur Savaète, 1898.

\* **Burness, William, Morton, John Chalmers, and Murray, Gilbert.** *Equipment.* ed. 2. pp. 142. 12°. London, Vinton & Co., n. d.

A treatise on farm equipment discussing implements, roads, fences, water supply, and farm buildings, with suggestions regarding construction and management.

\* **Davis, Lucius Daniel.** *Improving the farm, or methods of culture that shall afford a profit and at the same time increase the fertility of the soil.* ed. 2. pp. 187. New York, The Rural Publishing Co., n. d.

A discussion on the decline, retention, and restoration of the fertility of the soil, with special reference to green manuring, commercial fertilizers, and barnyard manure. Several chapters are devoted to the rearing and feeding of stock.

\* **Deloncle, Charles, and Dubreuil, Paul.** *Dictionnaire populaire d'agriculture pratique illustré* (Illustrated popular dictionary of agriculture). fasc. 6-8. 4°. Paris, Librairie de la "France Agricole," n. d.

An encyclopedia of agriculture.

\* **Drohojowska, Mme. (Symon de Latreiche).** *Les grands agriculteurs modernes* (The great modern agriculturists). pp. 142. figs. 10. 8°. Tours, Alfred Maine et fils, 1896.

This contains bibliographies and quotations from the writings of Olivier de Serres, Duhamel du Monceau, Parmentier, and Matthieu de Dombasle.

**Dubreuil, Paul.** See **Deloncle, Charles** (above).

\* **Elliott, J. R.** *American farms: Their condition and future.* ed. 2. pp. 274. 12°. New York, G. P. Putnam's Sons, 1890. (Questions of the Day series, No. 62.)

\* **Grille and Lefarge, G.** *L'agriculture et les machines agricoles aux états unis* (Agriculture and agricultural machines in the United States). pp. 179. text 4°. pls. 64, sq. f°.

An introductory chapter deals with systems of farming and the development of farm machinery in the United States. The rest of the book is devoted to descriptions and discussions of different makes of farm machinery, including harrows, cultivators, seeders and planters, mowers, reapers, threshing machines, straw elevators, traction engines, road machines, drainage tools, etc.

\* **Guntz, Max.** *Handbuch der landwirtschaftlichen Litteratur* (Handbook of agricultural literature). v. 1, pp. 170, figs. 6; v. 2, pp. xii + 310, figs. 24. Leipsic, H. Voigt, 1897.

Volume 1 contains a bibliography of the literature of agriculture issued previous to 1750. Volume 2 brings the bibliography up to date. Brief biographies of a number of writers are included in both volumes.

**Lefarge, G.** See **Grille** (above).

\* **McNab, Francis.** *On veldt and farm: In Cape Colony, Bechnanaland, Natal, and the Transvaal.* pp. 300. map 1. cr. 8°. London and New York, Edward Arnold, 1897.

The following from the table of contents will give an idea of the scope of the work: Markets, land purchase, trekking, political history, viticulture, fruit growing, Johannesburg, farming in the Transvaal, irrigation, locusts, ostriches, sheep, goats, wheat, forestry, native affairs, Natal, and tea, sugar, and coffee.

**Murray, Gilbert.** See **Burness, William** (above).

**Morton, John Chalmers.** See **Burness, William** (above).

\* **Soldani, G.** *Agromonia e agricoltura moderna* (Modern agronomy and agriculture). pp. 414. pls. 2. 8°. Milan, Hoepli, 1897.

A book for students and farmers.

